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"Descriptions of several new species of Plants, by S. B. Buckley."

"Descriptions of new species of Tertiary and Cretaceous Fossils, by William M. Gabb."

And were referred to Committees.

October 30th.

Mr. LEA, President, in the Chair.

Thirty-seven members present.

The Committee on the paper of Mr. Wm. M. Gabb, "Descriptions of new species of Tertiary and Cretaceous Fossils," reported in favor of its publication in the Journal of the Academy.

On report of the respective Committees, the following papers were ordered to be published in the Proceedings:

Systematic Catalogue, with Synonyma, &c., of Jurassic, Cretaceous and Tertiary Fossils collected in Nebraska, by the Exploring Expeditions under the command of Lieut. G. K. Warren, of U. S. Topographical Engineers.

BY F. B. MEEK AND F. V. HAYDEN.

Of the 276 species and varieties enumerated in the following catalogue, 25 are from Jurassic rocks, 194 from Cretaceous, and the remaining 57 from Tertiary strata. None of the Jurassic species are known to occur in this country east of the Black Hills, or south of the middle of eastern Utah, though some of them will probably be found in New Mexico. One species is believed to be identical with *Ostrea calceola* of Roemer from the Jurassic rocks of Germany, and another (*Ammonites cordiformis*) is probably not distinct from *A. cordatus*, Sowerby, which occurs in the Jurassic series of England, France, Russia, &c. Nearly all the other Jurassic species mentioned in the list are closely allied to forms common in the lower part of that system (the Lower Oolite and Lias) in the old world, and several of them may prove identical on farther comparison.

Of the 194 Cretaceous species the following seven are common to the Nebraska and New Jersey beds viz.—*Nautilus Dekayi*, *Ammonites placenta*, *A. complexus**, *A. lobatus**, *Scaphites Conradi*, *Baculites ovatus*, and *Gryphæa vesicularis*?; and the following five species are probably common to Nebraska and foreign localities, viz.—*Nautilus Dekayi*, *Inoceramus problematicus*, *Gryphæa vesicularis*, *Cucullæa fibrosa*, and *Micorbacia coranula*.

The 57 Tertiary species are believed to be all distinct from foreign forms, and none of them have yet been found in this country east of Nebraska, or south of north eastern Utah. They are all, so far as known, extinct species.

JURASSIC SPECIES.

CEPHALOPODA.

BELEMNITIDÆ.

1. *Belemnites densus*, Meek & Hayden, March 1858, Pr. Acad. Nat. Sci. Phila. 58.

* We are indebted to Mr. Wm. M. Gabb, of Philada, for information in regard to the occurrence of these two species in New Jersey.

AMMONITIDÆ.

2. *Ammonites cordiformis*, M. & H. March 1858, Pr. Acad. Nat. Sci. 57.
 3. *Ammonites Henryi*, M. & H. " " " 57.

GASTEROPODA.

VALVATIDÆ.

4. **Valvata? scabrida*, Meek & Hayden (Manuscript).

LIMNÆIDÆ.

5. **Planorbis veteris*, Meek & Hayden (Manuscript).

CONCHIFERA.

ANATINIDÆ.

6. *Thracia? sublævis*, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 182.
 7. *Thracia? arcuata*, M. & H. " " " 182.
 8. *Myacites Nebrascensis*, M. & H. " " " 182.
 9. *Myacites subellipticus*, M. & H.
Panopa (Myacites) subelliptica, M. & H. March 1858, Pr. Acad. Nat. Sci. Phila. 52.
 10. *Pholadomya humilis*, M. & H. March 1858, Pr. Acad. Nat. Sci. Phila. 52.

CARDIADÆ.

11. *Cardium [Protocardium?] Shumardi*, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 182.
 12. *Tancredia Warrenana*, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 183.
 13. *Tancredia? æquilateralis*, " " " 183.

ASTARTIDÆ.

14. *Astarte fragilis*, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 183.
 15. *Astarte inornata*, M. & H. " " " 183.

UNIONIDÆ.

16. **Unio nucalis*, M. & H. March 1858, Pr. Acad. Nat. Sci. Phila. 52.

MYTILIDÆ.

17. *Modiola pertenuis*, Meek & Hayden.
Mytilus pertenuis, M. & H. March 1858, Pr. Acad. Nat. Sci. Phila. 51.

AVICULIDÆ.

18. *Monotis curta*, Hall sp.
Avicula curta, Hall, 1852, Capt. Stansbury's Report Exp. to Gt. Salt Lake, 412, pl. 2, fig. 1, a and b.
Avicula (Monotis) tenuicostata M. & H. March 1858, Pr. Acad. Nat. Sci. 50.

TRIGONIADÆ.

19. *Trigonia Conradi*, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 183.

*These three species are only ranged provisionally in the Jurassic list.

ARCADÆ.

20. *Grammatodon inornatus*, Meek & Hayden.
Arca (Cucullæa) inornata, M. & H. March 1858, Pr. Acad. Nat. Sci. Phila. 51.

PECTENIDÆ.

21. *Pecten extenuatus*, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 184.

OSTREADÆ.

22. *Ostrea (Gryphæa?) calceala*, Römer, ii. 25, t. 18, fig. 19.

BRACHIOPODA.

LINGULIDÆ.

23. *Lingula brevirostra*, M. & H. March 1858, Pr. Acad. Nat. Sci. Phila. 50.
 24. *Rhynchonella* — ?

RADIATA.

ECHINODERMATA.

PENTACRINIDÆ.

25. *Pentacrinus asteriscus*, M. & H. Mar. 1858, Pr. Acad. Nat. Sci. Phila. 49.

CRETACEOUS SPECIES.

ARTICULATA.

ANNELIDA.

TUBICOLA.

26. *Serpula? tenuicarinata*, M. & H. May 1857, Pr. Acad. Nat. Sci. Phil. 134.

MOLLUSCA.

CEPHALOPODA.

TEUTHIDÆ.

27. *Phylloteuthis subovatus*, M. & H. May 1860, Pr. Acad. Nat. Sci. Phil. 175.

BELEMNITIDÆ.

28. *Belemnitella bulbosa*, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 70.

NAUTILIDÆ.

29. *Nautilus Dekayi*, Morton, 1834, Synop. Or. Rem. 33, pl. 8, fig. 4, and pl. 13, fig. 4.

AMMONITIDÆ.

30. **Ammonites percarinatus*, Hall & Meek, 1854, Mem. Am. Acad. Arts and Sci. Boston, v. N. S. pl. iv. fig. 2.

*This species was first figured and described from young, or immature specimens, which differ remarkably from the adult. We have subsequently seen individuals of various sizes, which lead us to think it will probably prove to be identical with *A. Woolgari*, of Mantell, from the English chalk.

31. *Ammonites vermillionensis*, M. & H. May 1869, Pr. Acad. Nat. Sci. Phila. 177.
32. *Ammonites complexis*, Hall & Meek, 1854, Mem. Am. Arts and Sci. Boston, v. N. S. 394, pl. iv. fig. 1.
33. *Ammonites Halli*, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 70.
34. *Ammonites placenta*, Dekay, 1827, New York Lyc. Nat. ii. pl. 5, fig. 2. (Non *A. placenta* Leckenby, 1858.)
35. *Ammonites placenta*, var. *intercalaris*, M. & H. Pr. Acad. Nat. Sci. Phila. 177.
36. *Ammonites lobatus*, Tuomey, 1854, Pr. Acad. Nat. Sci. Phila. vii. 168, *Ammonites lenticularis*, Owen, 1852 Report Iowa, Wiscon. and Min. tab. 8. fig. 5 (non *A. lenticularis* of Phillips, 1825).
37. *Scaphites Mandanensis*, Morton sp.
Ammonites Mandanensis, Morton, 1841, Jour. Acad. Nat. Sci. Phila. viii. 208, pl. 10, fig. 2.
Scaphites Mandanensis, Meek & Hayden, Nov. 1836, Pr. Acad. Nat. Sci. Phila. 281.
38. *Scaphites abyssinus*, Morton sp.
Scaphites Mandanensis? Meek & Hayden, Nov. 1836, Pr. Acad. Nat. Sci. Phila. 281.
39. *Scaphites Cheyennensis*, Owen sp.
Ammonites Nebraskaensis, Owen, 1852. Report Wiscon. Iowa and Min. pl. 7, fig. 2.
Ammonites Cheyennensis, Owen, " " " pl. 8, fig. 2.
Ammonites Moreauensis, Owen, " " " pl. 8, fig. 2.
Scaphites Conradi (pars), Meek & Hayden, Nov. 1856, Pr. Acad. Nat. Sci. Phila. 281.
40. *Scaphites Conradi*, Morton sp.
Ammonites Conradi, Morton, 1834, Synop. Org. Rem. 39, pl. 16, fig. 1, 2, 3.
Ammonites Danae, d'Orbigny, 1850, Prodr. de Palæont. ii. 213.
Scaphites Conradi, d'Orbigny, 1850, " " " 214.
41. *Scaphites Conradi*, var. *gulosus*, Morton sp.
Ammonites var. *gulosus*, Morton, 1854, Synopsis Org. Rem. 39. pl. xvi. fig. 2.
42. *Scaphites Nicolletii*, Morton sp.
Ammonites Nicolletii, Morton, 1841, Jour. Ac. Nat. Sci. Phila. viii. pl. 10, fig. 3.
Scaphites comprinus [?], Owen, Report Wiscon. Iowa and Min. tab. 7, fig. 4.
Scaphites Nicolletii, Meek & Hayden, Nov. 1856, Proc. Acad. Nat. Sci. Phila. 281.
43. *Scaphites* (*Ammonites*?) *nodosus*, Owen, 1852, Report Iowa, Wiscon. and Min. 581, tab. 8, fig. 4.
44. *Scaphites nodosus* var. *plenus*, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 177.
45. *Scaphites nodosus* var. *brevis*, Meek & Hayden (MSS.)
46. *Scaphites nodosus* var. *quadrangulus*, Meek & Hayden (MSS.)
47. *Scaphites nodosus* var. *exilis*, Meek & Hayden.
48. *Scaphites larvæformis*, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 58.
49. *Scaphites Warreni*, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 177.
50. *Ancyloceras*? *uncus*, Meek & Hayden.
Ancyloceras (*Hamites*) *uncus*, M. & H. Pr. Acad. Nat. Sci. Phila. 56.

[Oct.

51. *Helicoceras Mortonii*, Hall & Meek, sp.
Hamites Mortonii, Hall & Meek, 1854, Mem. Am. Acad. Arts and Sci. v. N. S.
 pl. iv. fig. 3.
Helicoceras tenuicostatum, M. & H. March 1858, Pr. Acad. Nat. Sci. Phila. 56.
52. *Helicoceras cochleatum*, Meek & Hayden.
Turrilites (Helicoceras) cochleatus, M. & H. March 1858, Pr. Acad. Nat. Sci.
 Phila. 55.
Helicoceras cochleatum, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 185.
53. *Helicoceras Nebrascense*, Meek & Hayden.
Ancylloceras? Nebrascensis, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 71.
Turrilites Nebrascensis, M. & H. Nov. 1856, " " 280.
54. *Helicoceras tortum*, M. & H. March 1858, " " 54.
55. *Helicoceras Cheyennense*, Meek & Hayden.
Ancylloceras? Cheyennense, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 71.
Turrilites Cheyennensis, M. & H. Nov. 1856, " " 280.
56. *Helicoceras angulatum*, M. & H. May 1860, " " 176.
57. *Helicoceras umbilicatum*, Meek & Hayden.
Turrilites? umbilicatus, M. & H. March 1858, Pr. Acad. Nat. Sci. Phila. 56.
Helicoceras umbilicatum, M. & H. May 1860, " " 185.
58. *Ptychoceras Mortonii*, M. & H. May 1857, " " 134.
59. *Baculites ovatus*, Say, Jour. Acad. Nat. Sci. Phila. vi. pl. v. fig. 5, 6.
60. *Baculites grandis*, Hall & Meek, 1854, Mem. Am. Acad. Arts and Sci.
 Boston, v. N. S. 402.
61. *Baculites asperoides*, Meek & Hayden (MSS.)
62. *Baculites compressus*, Say, Am. Jour. Sci. ii. 41.
63. *Aptychus Cheyennensis*, Meek & Hayden (MSS.)
64. *Aptychus fragilis*, Meek & Hayden (MSS.)

GASTEROPODA.

MURICIDÆ.

65. *Fusus (Neptunea) Dakotensis*, M. & H. March 1856, Pr. Acad. Nat. Sci.
 Phila. 65.
66. *Fusus (Pyrifusus?) Newberryi*, M. & H. March 1857, Pr. Acad. Nat. Sci.
 Phila. 66.
67. *Fusus subturritus*, M. & H. May 1857, Pr. Acad. Nat. Sci. Phila. 139.
68. *Fusus intertextus*, M. & H. " " " 139.
69. *Fusus? flexicostatus*, M. & H. March 1856, " " 66.
70. *Fusus Vaughani*, M. & H. May 1857, " " 139.
71. **Fusus vinculum*, Hall & Meek sp.
Buccinum? vinculum, H. & M. Mem. Acad. Sci. and Arts, Bos. v. N. S. pl. 3, fig. 5.
Fusus vinculum, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 183.
72. *Fusus Scarboroughi*, M. & H. May 1857, " " 139.

*It is not improbable that this species may be found to possess affinities to some section of the genus *Tritonium* Link. It is certainly not a true *Buccinum*.

73. *Fusus Culbertsoni*, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 66.
Fusus Haydeni, Evans & Shumard, 1857, Trans. Acad. Sci. St. Louis, 41.
74. *Fusus Galpinanus*, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 65.
75. *Fusus? tenuilineatus*, Hall & Meek, 1854, Mem. Am. Acad. Arts and Sci. Boston, v. N. S. 394, pl. 3, fig. 9.
76. *Busycon Bairdi*, Meek & Hayden.
Pyrula Bairdi, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 66.
Busycon Bairdi, M. & H. June 1856, " " 126.

TURRITIDÆ.

77. *Turris minor*, Evans & Shumard sp.
Pleurotoma minor, E. & S. 1857, Trans. Acad. Sci. St. Louis, i. 41.
78. *Turris contortus*, Meek & Hayden.
Fusus contortus, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 65.
Pleurotoma contorta, M. & H. May 1860, " " 183.

BUCCINIDÆ.

79. *Buccinum constrictum*, Hall & Meek sp.
Fusus constrictum, H. & M. Mem. Am. Acad. Arts and Sci. Boston, v. 391,
pl. 3, fig. 7.
80. *Pseudobuccinum Nebrascense*, Meek & Hayden.
Buccinum? Nebrascense, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 67.
Pseudobuccinum Nebrascense, M. & H. May 1857, " " 140.

FASCIOLARIADÆ.

81. *Fasciolaria? cretacea*, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 66.
82. *Fasciolaria buccinoides*, M. & H. " " " 67.

NATICIDÆ.

83. *Natica (Lunatia) subcrassa*, M. & H. April 1856, Pr. Ac. Nat. Sci. Phil. 87.
84. *Natica (Lunatia) Moreauensis*, M. & H. Mar. 1856, " " 64.
85. *Natica (Lunatia) occidentalis*, M. & H. " " " 64.
86. *Amauropsis paludinæformis*, Hall & Meek, sp.
Natica paludinæformis, H. & M. 1854, Mem. Am. Sci. and Arts, Boston, v.
389, pl. 3, fig. 3.
Amauropsis palludinæformis, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 185.

SCALIDÆ.

87. *Scala (Acirsa) cerithiformis*, Meek & Hayden.
Scalaria cerithiformis, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 63.
Turbonilla cerithiformis, M. & H. May 1860, " " 185.

CERITHIOPSIDÆ.

88. *Cerithiopsis Moreauensis*, Meek & Hayden.
Turritella Moreauensis, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 70.
Cerithiopsis Moreauensis, M. & H. May 1860, " " 185.

STROMBIDÆ.

89. *Gladius? Cheyennensis*, Meek & Hayden.
Rostellaria fusiformis, H. & M. 1854, Mem. Acad. Sci. and Arts, Boston, v.
N. S. pl. 3, fig. 10.
(Non *R. fusiformis*, Pictet & Roux, 1848.)

[Oct.

APORRHAIIDÆ.

90. *Aporrhais Americana*, Evans & Shumard sp.
Rostellaria Americana, E. & S. 1857, Trans. St. Louis Acad. Sci. i. 42.
91. *Aporrhais Nebrascensis*, Evans & Shumard, sp.
Rostellaria Nebrascensis, E. & S. Aug. 1854, Pr. Acad. Nat. Sci. Phila. 164.
92. *Aporrhais sublevata*, M. & H. May 1860, " " 178.
93. *Aporrhais biangulata*, Meek & Hayden,
Rostellaria biangulata, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 65.
Aporrhais biangulata, M. & H. May 1860, " " 185.
94. *Aporrhais parva*, M. & H. " " " 178.

LITORINIDÆ.

95. *Fossar? Nebrascensis*, Meek & Hayden.
Natica ambigua, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 66.
 (Non *Fossar ambigua*, Lin. sp.)

NERITOPSIDÆ.

96. *Neritopsis? Tuomeyana*, Meek & Hayden.
Natica Tuomeyana, M. & H. Nov. 1856, Pr. Acad. Nat. Sci. Phila. 270.

TROCHIDÆ.

97. *Margarita Nebrascensis*, Meek & Hayden.
Turbo Nebrascensis, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 64.
Margarita Nebrascensis, M. & H. May 1860, " " 185.
98. **Margaritella flexistriata*, Evans & Shumard sp.
Solarium flexistriatum, E. & S. Aug. 1854, Pr. Acad. Nat. Sci. Phila. 163.

DENTALIADÆ.

99. *Dentalium gracile*, H. & M. 1854, Mem. Am. Acad. Arts. and Sci. Boston, v. N. S. pl. 3, fig. 11.
100. *Dentalium pauperculum*, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 178.

TECTURIDÆ.

101. *Tectura occidentalis*, Hall & Meek, sp.
Capulus occidentalis, H. & M. 1854, Mem. Am. Acad. Sci. and Arts, Boston, v. N. S. p. 385, fig. 13.
102. *Tectura? parva*, Meek & Hayden (manuscript.)
103. *Tectura? papillata*, Meek & Hayden.
Capulus fragilis, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 68.
 (Non *Tectura fragilis*, Gray & Gamard.)
104. *Anisomyon borealis*, Morton sp.
Hipponyx borealis, Morton. 1842, Jour. Ac. Nat. Sci. Phila. viii. pl. 11. fig. 6.
Helcion carinatus, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 68.
Anisomyon borealis, M. & H. Jan. 1860, Am. Jour. Sci. xxviii. 2d ser. 35.
105. *Anisomyon Shumardi*, Meek & Hayden (manuscript).

* We propose to establish a new genus, under the name of *Margaritella*, for the reception of many pearly Jurassic and Cretaceous shells usually referred to *Solarium*. It is evident from the pearly lustre, and other characters of these fossil shells, that they do not even belong to the same family as our recent typical species of the genus *Architectonica* (= *Solarium*.) The above species may be regarded as the type of the genus.
 1860.]

196. *Anisomyon patelliformis*, Meek & Hayden.
Helcion patelliformis, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 68.
Anisomyon patelliformis, M. & H. Jan. 1860, Am. Jour. Sci. xxviii. 2d. ser. 35, pl. 1.
197. *Anisomyon subovatus*, Meek & Hayden.
Helcion subovatus, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 68.
Anisomyon subovatus, M. & H. Jan. 1860, Am. Jour. Sci. xxviii. 2d ser. 35.
198. *Anisomyon alveolatus*, Meek & Hayden.
Helcion alveolatus, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 68.
Anisomyon alveolatus, M. & H. Jan. 1860, Am. Jour. Sci. xxxviii. 2d ser. 35.
199. *Anisomyon sexsulcatus*, Meek & Hayden.
Helcion sexsulcatus, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 68.
Anisomyon sexsulcatus, M. & H. Jan. 1860, Am. Jour. Sci. xxxviii. 2d ser. 35.

SOLIDULIDÆ.

110. *Solidula subelliptica*, Meek & Hayden.
Acteon subelliptica, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 63.
Solidulus (Acteonina?) subelliptica, M. & H. May 1860, " " 185.
111. *Solidula (Acteonina?) attenuata*, Meek & Hayden.
Acteon (solidulus) attenuata, M. & H. Mar. 1858, Pr. Acad. Nat. Sci. Phila. 54.
Solidulus attenuatus, M. & H. May 1860, " " 185.
112. *Cinulia concinna*, Hall & Meek, sp.
Acteon concinna, H. & M. 1854, Mem. Am. Acad. Arts and Sci. Boston, v. N. S. pl. 3, fig. 4.
Avellana subglobosa, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 64.

BULLIDÆ.

113. *Bulla occidentalis*, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 69.
114. *Bulla minor*, M. & H. " " " 69.
115. *Bulla volvaria*, M. & H. " " " 69.
116. *Bulla speciosa*, Meek & Hayden.
Bulla subcylindrica, M. & H. Nov. 1856, Pr. Acad. Nat. Sci. Phila. 270.
(Non *B. subcylindrica*, d'Orbigny, 1847).
Bulla speciosa, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 185.

CYLICHNIDÆ.

117. *Cyllichna scitula*, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 178.

CONCHIFERA.

PHOLADIDÆ.

118. *Pholas? Stimpsoni*, Meek & Hayden.
Xylophaga Stimpsoni, M. & H. May 1857, Pr. Acad. Nat. Sci. Phila. 141.
119. *Pholas (Martesia) cuneata*, M. & H. Mar. 1858, " " 53.
120. *Xylophaga elegantula*, M. & H. May 1857, " " 141.
121. *Teredo selliformis*, M. & H. May 1860, " " 178.
122. *Teredo globosa*, M. & H. March 1858, " " 53.

SAXICAVIDÆ.

123. *Panopæa occidentalis*, M. & H. Nov. 1856, Pr. Acad. Nat. Sci. Phil. 270.
[Oct.

SOLENIIDÆ.

124. *Pharella?* *Dakotensis*, Meek & Hayden.
Solen? *Dakotensis*, M. & H. May 1857, Pr. Acad. Nat. Sci. Phila. 242.

CORBULIDÆ.

125. *Corbula crassimarginata*, Meek & Hayden (MSS.)
 126. *Corbula inornata*, M. & H. March 1858, Pr. Acad. Nat. Sci. Phila. 52.
 127. *Corbulamella gregarea*, Meek & Hayden.
Corbula? *gregarea*, M. & H. April 1856, Pr. Acad. Nat. Sci. Phila. 84.
Corbulamella gregarea, M. & H. May 1857, " " 143.
 128. *Neæra ventricosa*, Meek & Hayden.
Corbula ventricosa, M. & H. April 1856, Pr. Acad. Nat. Sci. Phila. 83.
Neæra ventricosa, M. & H. May 1860, " " 183.
 129. *Neæra Moreauensis*, Meek & Hayden.
Corbula Moreauensis, M. & H. Ap. 1856, Pr. Acad. Nat. Sci. Phila. 83.
Neæra Moreauensis, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 185.

ANATINIDÆ.

130. *Thracia subtortuosa*, Meek & Hayden.
Tellina subtortuosa, M. & H. Nov. 1856, Pr. Acad. Nat. Sci. Phila. 272.
 131. *Thracia gracilis*, Meek & Hayden.
Tellina gracilis, M. & H. April 1855, Pr. Acad. Nat. Sci. Phila. 82.
Thracia? *gracilis*, M. & H. Nov. 1856, " " 284.
 132. *Thracia Prouti*, Meek & Hayden.
Tellina Prouti, M. & H. April 1856, Pr. Acad. Nat. Sci. Phila. 85.
 133. *Pholadomya (?) fibrosa*, Meek & Hayden.
Avicula (?) fibrosa, M. & H., Ap. 1856, Pr. Acad. Nat. Sci. Phila. 86.
Pholadomya fibrosa, M. & H., Nov. 1856, " " " 283.
 134. *Pholadomya subventricosa*, M. & H., May, 1857, Pr. Acad. Nat. Sci. Phila. 142.
 135. *Pholadomya undata*, M. & H., Ap. 1856, Pr. Acad. Nat. Sci. Phila. 81.

MACTRIDÆ.

136. *Mactra (Trigonella?) formosa*, Meek & Hayden, Nov. 1856, Pr. Acad. Nat. Sci. Phila. 271.
 137. *Mactra (Trigonella?) alta*, M. & H., Nov. 1856, Pr. Acad. Nat. Sci. Phila. 271.
 138. *Mactra (Trigonella?) siouxensis*, M. & H. May, 1860, Pr. Acad. Nat. Sci. Phila. 179.
 139. *Mactra (Trigonella?) Warrenana*, M. & H., Nov. 1856, Pr. Acad. Nat. Sci. Phila. 281.
 140. *Mactra (Trigonella?) gracilis*, M. & H., May, 1860, Pr. Acad. Nat. Sci. Phila. 179.

TELLINIDÆ.

141. *Tellina equilateralis*, Meek & Hayden, Ap. 1856, Pr. Acad. Nat. Sci. Phila. 82.
 142. *Tellina scitula*, M. & H., Ap. 1856, Pr. Acad. Nat. Sci. Phila. 82.
 143. *Tellina (?) formosa*, M. & H., May 1860, Pr. Acad. Nat. Sci. Phila. 179.
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144. *Tellina* (?) *subelliptica*, M. & H., Ap. 1856, Pr. Acad. Nat. Sci. Phila. 83.
 145. *Tellina* (?) *Cheyennensis*, M. & H., Ap. 1856, Pr. Acad. Nat. Sci. Phila. 82.

VENERIDÆ.

146. *Venus circularis*, Meek & Hayden, Nov. 1856, Pr. Acad. Nat. Sci. Phila. 272.
 147. *Meretrix tenuis*, Hall & Meek, sp.
Cytherea tenuis, Hall & Meek, 1854, Mem. Am. Acad. Arts and Sci. Boston, v. N. S. 383, pl. 1, fig. 8.
Meretrix tenuis, M. & H., May 1860, Pr. Acad. Nat. Sci. Phila. 185.
 148. *Meretrix pellucida*, Meek & Hayden.
Cytherea pellucida, M. & H., Nov. 1856, Pr. Acad. Nat. Sci. Phila. 272.
Meretrix pellucida, M. & H. May 1860, " " " " 185.
 149. *Meretrix Deweyi*, Meek & Hayden.
Cytherea Deweyi, M. & H., Ap. 1856, Pr. Acad. Nat. Sci. Phila. 83.
Meretrix Deweyi, M. & H., May 1860, " " " " 185.
 150. *Meretrix Owenana*, Meek & Hayden.
Cytherea Owenana, M. & H., Nov. 1856, Pr. Acad. Nat. Sci. Phila. 273.
Meretrix Owenana, M. & H., May 1860, " " " " 185.
 151. *Meretrix orbiculata*, Hall & Meek, sp.
Cytherea orbiculata, Hall & Meek, 1854, Mem. Acad. Arts and Sci. Boston, v. N. S. pl. 1, fig. 7.
Meretrix orbiculata, Meek & Hayden, May 1860, Pr. Acad. Nat. Sci. Phila. 185.

CYPRINIDÆ.

152. *Cyprina arenarea*, Meek & Hayden, May 1857, Pr. Acad. Nat. Sci. Phila. 143.
 153. *Cyprina subtumida*, M. & H., May 1857, Pr. Acad. Nat. Sci. Phila. 144.
 154. *Cyprina humilis*, M. & H., May 1860, Pr. Acad. Nat. Sci. Phila. 179.
 155. *Cyprina ovata*, M. & H., May 1857, Pr. Acad. Nat. Sci. Phila. 144.

CARDIDÆ.

156. *Bucardia*? *Moreauensis*, Meek & Hayden.
Cyprina cordata, M. & H., May 1857, Pr. Acad. Nat. Sci. Phila. 143.
 (Non. *B. cordata* sp. Buckm.)
 157. *Tancredia Americana*, Meek & Hayden.
Hettangia Americana, M. & H., Nov. 1856, Pr. Acad. Nat. Sci. Phila. 274.
Tancredia Americana M. & H., May 1860, " " " " 185.
 158. *Cardium speciosum*, Meek & Hayden, Nov. 1856, Pr. Acad. Nat. Sci. Phila. 274.
 159. *Cardium rarum*, Evans & Shumard, Trans. Acad. Nat. Sci. St. Louis, i. 39.
 160. *Cardium subquadratum*, E. & S., Trans. Acad. Nat. Sci. St. Louis, i. 39,

LUCINIDÆ.

161. *Lucina occidentalis*, Morton, sp.
Tellina occidentalis, Morton, 1842, Jour. Acad. Nat. Sci. Phila. viii. pl. 11, fig. 3.

[Oct.

Lucina occidentalis, M. & H., Nov. 1856, Pr. Acad. Nat. Sci. Phila. 272.

162. *Lucina subundata*, Hall & Meek, 1854, Mem. Am. Acad. Arts and Sci. Boston, v. N. S. pl. 1, fig. 6.

163. *Lucina ventricosa*, Meek & Hayden, (MSS.)

SOLEMYIDÆ.

164. *Solemya subplicata*, Meek & Hayden.

Solen subplicata, M. & H., Pr. Acad. Nat. Sci. Phila. Ap. 1856, 82.

ASTARTIDÆ.

165. *Crassatella Evansi*, Hall & Meek, 1854, Mem. Am. Acad. Arts and Sci. Boston, v. N. S. 383, pl. 1, fig. 9.

166. *Astarte gregaria*, M. & H., Ap. 1856, Pr. Acad. Nat. Sci. Phila. 84.

MYTILIDÆ.

167. *Mytilus subarcuatus*, Meek & Hayden, Nov. 1856, Pr. Acad. Nat. Sci. Phila. 276.

168. *Modiola* * *Meekii*, Evans & Shumard, sp.

Mytilus Galpinianus, E. & S., Aug. 1854, Pr. Acad. Nat. Sci. Phila. 164.

169. *Modiola attenuata*, Meek & Hayden.

Mytilus attenuatus, M. & H., Ap. 1856, Pr. Acad. Nat. Sci. Phila. 86.

AVICULIDÆ.

170. *Avicula linguiformis*, Evans & Shumard, 1854, Pr. Acad. Nat. Sci. Phila. 163.

171. *Avicula subgibbosa*, Meek & Hayden, May 1860, Pr. Acad. Nat. Sci. Phila. 180.

172. *Avicula nebrascana*, Evans & Shumard, 1857, Trans. Acad. Sci. St. Louis, i. p. 38.

173. *Avicula Haydeni*, Hall & Meek, 1854, Mem. Am. Acad. Sci. and Arts, Boston, v. N. S. 382, pl. 1, fig. 5.

174. *Gervillia sub tortuosa*, Meek & Hayden, Nov. 1856, Pr. Acad. Nat. Sci. Phila. 276.

175. *Inoceramus pertenuis*, Meek & Hayden, Nov. 1856, Pr. Acad. Nat. Sci. Phila. 276.

Inoceramus ventricosus, M. & H. March 1856, Pr. Acad. Nat. Sci. Phila. 87.
(Non *I. ventricosus*, Sowerby.)

176. *Inoceramus pertenuis*, var. *subdepressus*, Meek & Hayden.

177. *Inoceramus subcompressus*, Meek & Hayden, May 1860, Pr. Acad. Nat. Sci. Phila. 181.

178. *Inoceramus fragilis*, Hall & Meek, 1854, Mem. Am. Acad. Arts and Sci. Boston, v. N. S. 388, pl. 2, fig. 6.

179. *Inoceramus problematicus*, Schlot. sp.?

Mytilites problematicus Schlotheim, Petrefact. 312.

Inoceramus mytiloides, Mantell, 1822, Geol. Sussex, pl. 27, fig. 3 and pl. 28, fig. 2.

* The name *Valsella* Scopoli may have to be adopted for this genus.

- Inoceramus problematicus*, d'Orbigny, 1843, Palæont. Franc. t. iii. 510, pl. 406.
180. *Inoceramus pseudo-mytiloides*, Schiel., 1855, ii. Pacif. Rail Road Rept. 108, pl. 3, fig. 8.
181. *Inoceramus aviculoides*, M. & H. May 1860, Pr. Acad. Nat. Sci. Phila. 181.
182. *Inoceramus sublaevis*, Hall & Meek, 1854, Mem. Acad. Arts and Sci. v. N. S. 386, pl. 2, fig. 1.
183. *Inoceramus convexus*, Hall & Meek, 1854, Am. Ac. Arts and Sci. v. N. S. 386, pl. 2, fig. 2.
184. *Inoceramus tenuilineatus*, H. & M., 1854, Am. Ac. Arts and Sci. v. N. S. 386, pl. 2, fig. 3.
185. *Inoceramus cuneatus*, M. & H., May 1860, Pr. Ac. Nat. Sci. Phila. 181.
186. *Inoceramus Sagensis*, Owen, (?) 1852, Report, Survey Min. Iowa and Wiscon. 582, tab. vii. fig. 3.
187. *Inoceramus incurvus*, M. & H., Nov. 1856, Pr. Ac. Nat. Sci. Phil. 277.
188. *Inoceramus umbonatus*, M. & H., March 1858, Pr. Ac. Nat. Sci. Phila. 50.
189. *Inoceramus Mortoni*, M. & H., (MSS.)
190. *Inoceramus Nebrascensis*, Owen, 1852, Rept. Iowa, Wiscon. and Min. 582, pl. 8. fig. 1.
191. *Inoceramus Vanuxemi*, M. & H., May 1860, Pr. Ac. Nat. Sci. Phil. 180.
192. *Inoceramus Balchii*, M. & H., " " " " 180.
193. *Arca sulcatina*, Evans & Shumard, 1857, Trans. St. Louis Ac. Sci. 39.
194. *Arca exigua*, Meek & Hayden.
Cucullæa exigua, M. & H., Nov. 1856, Pr. Ac. Nat. Sci. Phil. 275.
195. *Cucullæa fibrosa*, Sowerby, 1818, Min. Conch. iii. 9.
Arca fibrosa, d'Orbigny, 1843, Palæont. Franc. t. iii. 212, pl. 312.
Arca (cucullæa) Shumardi, M. & H., Ap. 1856, Pr. Ac. Nat. Sci. Phil. 86.
196. *Cucullæa cordata*, Meek & Hayden.
Arca (cucullæa) cordata, M. & H., Ap. 1856, Pr. Ac. Nat. Sci. Phila. 86.
Cucullæa cordata, M. & H., Nov. 1856, " " " " 285.
197. *Cucullæa Nebrascensis*, Owen, 1852, Rept. Wiscon. Iowa and Min. 582, pl. 8, fig. 1, 1 a.
198. *Axinæa siouxensis*, Hall & Meek, sp.
Pectunculus siouxensis, H. & M., 1854, Mem. Ac. Arts and Sci. Boston, v. N. S. 384, pl. 1, fig. 12.
Axinæa siouxensis, M. & H. May 1860, Pr. Ac. Nat. Sci. Phila. 185.
199. *Axinæa subimbricata*, Meek & Hayden.
Pectunculus subimbricatus, M. & H., May 1857, Pr. Ac. Nat. Sci. Phila. 146.
Axinæa subimbricatus, M. & H., May 1860, " " " " 185.
200. *Limopsis parvula*, Meek & Hayden.
Pectunculina parvula, M. & H., Ap. 1856, Pr. Ac. Nat. Sci. Phila. 86.
Limopsis parvula, M. & H., Nov. 1856, " " " " 285.
- LEDIDÆ.
201. *Leda (Yoldia) scitula*, Meek & Hayden.
Nucula scitula, M. & H., Ap. 1856, Pr. Ac. Nat. Sci. Phila. 84.
Leda scitula, M. & H., May 1860, " " " " 185.

[Oct.

202. *Leda* (*Yoldia*) *Evansi*, Meek & Hayden.
Nucula Evansi, M. & H., Ap. 1856, Pr. Ac. Nat. Sci. Phila. 84.
Leda Evansi, M. & H., May 1860, " " " 185.
203. *Leda* (*Yoldia*) *ventricosa*, Hall & Meek, sp.
Nucula ventricosa, H. & M., 1854, Mem. Ac. Arts and Sci. Boston, v. N.
S. 385, pl. 1, fig. 11. (Non. *N. ventricosa*, Hind, 1843.*)
204. *Leda* (*Yoldia*) *subnasuta*, Hall & Meek, sp.
Nucula subnasuta, H. & M., Mem. Am. Acad. Arts and Sci. Boston, v.
N. S. 384, pl. 1, fig. 11.

NUCULIDÆ.

205. *Nucula equilateralis*, M. & H., Ap. 1856, Pr. Ac. Nat. Sci. Phil. 84.
206. *Nucula subplana*, M. & H., " " " " 85.
207. *Nucula cancellata*, M. & H., " " " " 85.
208. *Nucula planimarginata*, M. & H., " " " " 85.
209. *Nucula absoletastriata*, M. & H., " " " " 275.

PECTENIDÆ.

210. *Pecten rigida*, Hall & Meek, 1854, Mem. Am. Ac. Sci. and Arts,
Boston, v. N. S. 381, pl. 2, fig. 4, *a, b, c*.
211. *Pecten Nebrascensis*, M. & H., Ap. 1856, Pr. Ac. Nat. Sci. Phil. 87.

ANOMIADÆ.

212. *Anomia obliqua*, M. & H., May 1860, Pr. Ac. Nat. Sci. Phila. 181.
213. *Anomia subtrigonatis*, M. & H., May 1860, Pr. Ac. Nat. Sci.
Phila. 181.

OSTREADÆ.

214. *Ostrea inornata*, M. & H., May 1860, Pr. Ac. Nat. Sci. Phila. 181.
215. *Ostrea translucida*, Meek & Hayden, (MSS.)
Ostrea larva, Hall & Meek, (non. Lamarck) 1854, Mem. Acad. Arts and
Sci. Boston, v. N. S. 406.
216. *Ostrea congesta*, Conrad, 1843, Nicolle's Report, Explor. N. W.
Territories, 167.
217. *Ostrea patina*, M. & H., 1856, Pr. Ac. Nat. Sci. Phila. 277.
218. *Gyphæa vesicularis*, Lamarck? sp.
Ostrea vesicularis, Lamarck, 1860, Am. Mus. viii. 160, T. 22, fig. 3.
Ostrea deltoidea, Lamarck, " " " and xiv. t. 21, pars.
Ostrea vesicularis of numerous authors.

BRACHIOPODA?

HIPPURITIDÆ.

219. *Caprinella? coralloidea*, Hall & Meek, 1854, Mem. Am. Ac. Arts and
Sci. Boston, v. N. S. 381, pl. 2, fig. 3.

* Should *Nucula ventricosa* of Hinds prove to be a true *Leda*, it will become necessary to give our Nebraska shell a new specific name, in which case we would propose to call it *Leda exigua*.

RADIATA.

FUNGIDÆ.

220. *Macrobacia coronula*, Goldf., sp. Petrefact. Germ. i. 50, tab. 14, fig. 10.

TERTIARY SPECIES

GASTEROPODA.

CERITHIADÆ.

221. *Cerithium* (*Cerithidea*?) *Nebrascensis*, M. & H., June 1860, Pr. Ac. Nat. Sci. Phila. 125.

MELANIADÆ.

222. *Melania* ? *Warreni*, M. & H., May 1857, Pr. Ac. Nat. Sci. Phila. 137.
 223. *Melania subtortuosa*, M. & H., “ “ “ “ 136.
 224. *Melania Nebrascensis*, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 124.
 225. *Melania tenuicarinata*, M. & H., May 1857, Pr. Ac. Nat. Sci. Phila. 137.
 226. *Melania convexa*, M. & H.
Turritella convexa, M. & H., March, 1856, Pr. Ac. Nat. Sci. Phila. 71.
Melania convexa, M. & H., “ “ “ “ 125.
 227. *Melania sublevis*, M. & H., “ “ “ “ 136.
 228. *Melania* ? *Anthonyi*, M. & H., “ “ “ “ 124.
 229. *Melania minutula*, M. & H., June 1856, “ “ “ 123.

VIVIPARIDÆ.

230. *Vivipara Conradi*, Meek & Hayden.
Paludina Conradi, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 122.
Vivipari Conradi, M. & H., May 1860, “ “ “ 185.
 231. *Vivipara Nebrascensis*, Meek & Hayden.
Paludina multilineata, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 120.
 (Non. *P. multilineata*, Say, 1829.
Vivipara multilineati, M. & H., May, 1860, Pr. Ac. Nat. Sci. Phila. 185.
 232. *Vivipara Leai*, Meek & Hayden.
Paludina Leai, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 121.
Vivipara Leai, M. & H., May 1860, “ “ “ 185.
 233. *Vivipara vetusta*, Meek & Hayden.
Paludina vetusta, M. & H., 1856, Pr. Ac. Nat. Sci. Phila. 121.
 234. *Vivipara retusa*, Meek & Hayden.
Paludina retusa, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 122.
Vivipara retusa, M. & H., May 1860, “ “ “ 185.
 235. *Vivipara trochiformis*, Meek & Hayden.
Paludina trochiformis, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 122.
Paludina Leidyi, ? M. & H., “ “ “ “ 123.
Vivipara trochiformis, M. & H., May 1860, “ “ “ 185.

VALVATIDÆ.

236. *Valvata subumbilicata*, Meek & Hayden.

[Oct.

- Planorbis subumbilicata*, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 120.
Valvata subumbilicata, M. & H., May 1860, " " " 185.
 237. *Valvata parvula*, M. & H., June 1856, " " " 123.

HELICIDÆ.

238. *Columna ? teres*, Meek & Hayden.
Bulimus ? teres, M. & H., June, 1856, Pr. Ac. Nat. Sci., Phila. 117.
 239. *Columna ? vermiculus*, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 118.
Bulimus ? vermiculus M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 118.
 240. *Bulimus limneiformis*, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 118.
Bulimus Nebrascensis, ? M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 118.
 241. *Helix Leidyi*, Hall & Meek, June 1854, Mem. Am. Acad. Arts and Sci. Boston, v. N. S. 394, pl. 3, fig. 12.
 242. *Helix vetusta*, Meek & Hayden.
H. vitrinoides, M. & H., May 1857, Pr. Ac. Nat. Sci. Phila. 135. (Non. *H. vitrinoides*, Deshayes, 1830).
 243. *Helix obliqua*, M. & H., May 1857, Pr. Ac. Nat. Sci. Phila. 134.
 244. *Helix Evansi*, M. & H., May 1860, Pr. Ac. Nat. Sci. Phila. 175.
 245. *Helix (Polygyra) amplexus*, Meek & Hayden.
Planorbis amplexus, M. & H., May 1857, Pr. Ac. Nat. Sci. Phila. 21.
Helix (Polygyra) amplexus, M. & H., May 1860, Pr. Ac. Nat. Sci. Phila. 185.
 246. *Helix Nebrascensis*, Meek & Hayden.
H. occidentalis, M. & H., May 1857, Pr. Ac. Nat. Sci. Phila. 135. (Non. *H. occidentalis*, Recluz. 1845.)

LIMNÆIDÆ.

247. *Limnæa (Acella) tenuicostata*, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 119.
 248. *Limnæa Meekana*, Evans & Shumard. (MSS.)
 249. *Limnæa ? multistriata*, Meek & Hayden.
Melania multistriata, M. & H., June 1826, Pr. Ac. Nat. Sci. Phila. 124.
 250. *Physa secalana*, Evans & Shumard, Aug. 1854, Pr. Ac. Nat. Sci. Phila. 156.
 251. *Physa (Aplexus) longiuscula*, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 119.
 252. *Physa (Aplexus) subelongata*, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 120.
 253. *Physa rhomboidea*, M. & H., June 1856, Pr. Ac. Nat. Sci. Phil. 119.
 254. *Planorbis (Segmentina ?) Nebrascensis*, Evans & Shumard, Aug. 1854, Pr. Ac. Nat. Sci. Phila. 164.
 255. *Planorbis (Segmentina ?) vetulus*, M. & H., May 1860, Pr. Ac. Nat. Sci. Phila. 175.
 256. *Planorbis Leidyi*, M. & H., May 1860, Pr. Ac. Nat. Sci. Phila. 175.
 257. *Planorbis convolutus*, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 120.

1860.]

258. *Planorbis planoconvexus*, Meek & Hayden.
Planorbis fragilis, M. & H., May 1857, Pr. Ac. Nat. Sci. Phila. 136.
 (Non. *P. fragilis*, Dunker, 1843.)
Planorbis planoconvexus, M. & H. May 1860, Pr. Ac. Nat. Sci. Phila. 185.
259. *Ancylus (Acroloxus) minuta*, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 120.

CONCHIFERA.

CORBULIDÆ.

260. *Corbula perundata*, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 116.
261. *Corbula (Potamomya) subtrigonalis*, Meek & Hayden.
Corbula subtrigonalis, M. & H. June, 1856, Pr. Ac. Nat. Sci. Phila. 116.
262. *Corbula (Potamomya) mactriiformis*, Meek & Hayden.
Corbula mactriiformis, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 117.

CYRENIDÆ.

263. *Corbicula Moreauensis*, Meek & Hayden.
Cyrena Moreauensis, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 115.
264. *Corbicula Nebrascensis*, Meek & Hayden.
Cyrena intermedia, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 116.
 (Non. *Cyrena (Corbicula) intermedia*, Mellville, 1843.)
265. *Corbicula cytheriiformis*, Meek & Hayden.
Cyrena (Corbicula?) cytheriiformis, M. & H., May 1860, Pr. Ac. Nat. Sci. Phila. 176.
266. *Corbicula occidentalis*, Meek & Hayden.
Cyrena occidentalis M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 116.
267. *Sphaerium planum*, M. & H., May 1860, " " " 175.
268. *Sphaerium formosum*, Meek & Hayden.
Cyclas formosa, M. & H., June 1856, P. Ac. Nat. Sci. Phila. 115.
Cyclas fragilis, M. & H., " " " 115.
Sphaerium formosum, M. & H., May 1860, " " " 185.
269. *Sphaerium subellipticum*, Meek & Hayden.
Cyclas subelliptica, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 115.
Sphaerium subellipticum, M. & H., May 1860, " " " 185.
270. *Sphaerium recticardinale*, M. & H., " " " " 176.

UNIONIDÆ.

271. *Unio priscus*, M. & H., June 1856, Pr. Ac. Nat. Sci. Phila. 117.
272. *Unio subspatulatus*, M. & H., May 1857, " " " 146.
273. *Unio Deweyanus*, M. & H., " " " " 145.
274. *Unio Danæ*, M. & H., " " " " 146.

OSTREADÆ.

275. *Ostrea subtrigonalis*, Evans & Shumard, 1857, Trans. St. Louis Acad. Sci. i. 38.
276. *Ostrea glabra*, Meek & Hayden, Pr. Ac. Nat. Sci. Phila. 146.

[Oct.

Observations on American Tineina.

BY H. T. STANTON, OF LONDON.*

Tinea biflavimaculella. This is closely allied if not identical with *T. Spilotella* (see Linn. Ent. vi. p. 108, *Rusticella*, var. b.) *Spilotella* appears confined to the north of Europe, occurring in Finland and Scotland.

T. dorsistrigella, is allied to *T. ferruginella*, but the markings much are whiter and the dorsal streak is broader. *T. nubilipennella* is identical with our *T. fuscipunctella*.

T. lanariella, is identical with our everywhere abundant *T. biselliella*.

Xylesthia pruniramiella. This curious genus appears to be rather allied to *Ochsenheimeria*; another strange genus in this vicinity, *Hapsifera*, was founded by Zeller, in the *Isis* of 1847, p. 32.

Amydria effrenatella. I am disposed to place this in the genus *Euplocamus*; the palpi are very like those of *E. tessulatella*, Z. (Linn. Ent. vi. p. 96.)†

Anaphora plumifrontella. I am utterly perplexed with this; we have no European form at all resembling it.

Lithocolletis lucidicostella } These are allied to the group of
L. argentifimbriella, } *Cramerella*, *Tenella* and *Heegeriella*.

L. basistrigella. This is nearly allied to a South European species, *Suberifoliella*, (Zell. Entomol. Zeitung, 1850, p. 208); but it is smaller, the basal streak is shorter, the subapical streaks are more distinct and the ground color darker.

Tischeria citrinipennella. This is rather intermediate between the European *Complanella* and *Marginea*; it possesses a black spot at the anal angle, as in the last named species.

Phyllocnistis vitigenella. This is closely allied to our *Suffusella* and *Saligna*; but it is smaller, and the position of the subapical dorsal streak is different.

Coleophora coruscipennella. This is very nearly allied to our *C. Fabriciella*; but the anterior wings are a little browner. The antennæ quite agree with those of *Fabriciella*.

Plutella vigilaciella. This is our *P. porrectella*; you will find the larva in gardens on *Hesperis matronalis*.

Plutella limbipennella. This is our *P. cruciferarum*; it seems cosmopolitan, as I have seen specimens from various parts of the globe. Probably wherever man eats cabbages *Cruciferarum* will occur.

Argyresthia oreasella. This seems quite identical with our *A. Andereggiella*.

*Mr. Stainton has very kindly sent me the following observations, on a small lot of American Tineina, forwarded to him late in July. In return, I am indebted to him for an interesting suite of European genera and specimens of those insects which he considers identical with ours. It is quite needless for me to say that I regard any opinion Mr. Stainton may deliberately form, on questions of classification, to be final.

After having examined a specimen of the genus *Simaethis*, I must acknowledge that *Brenthia* seems congeneric with it. Whether the former genus naturally belongs to the *Pyalidina* must be left for future determination. My own opinion at present is, that it is improperly included in this well-marked group.—BRACKENRIDGE CLEMENS.

†This is true of the labial palpi; but the auxiliary palpi in *Amydria* are extremely short.

Bedellia? Staintoniella. Certainly a Bedellia, and I cannot distinguish it specifically from our Somnulentella, only it is smaller.

Cosmopteryx? gemmiferella. A true Cosmopteryx; but your specimens are not all the same species; four of them I take to be the true Gemmiferella. These have the central fascia reddish-orange, edged with silvery violet. This fascia is considerably broadest on the costa, its hinder margin being formed by two silvery-violet spots, which are by no means opposite; at the apex of the wing is a short silvery white scale [streak?], preceded by a violet silvery spot, with which it is not connected.

The other two specimens, for which I propose the name Cosmopteryx Clemensella, differ from Gemmiferella in the anterior wings being darker, the orange fascia is paler, not so reddish, its margins are pale golden, instead of silvery-violet, and its hind margin is almost straight, (this is very different from Gemmiferella); finally, the apical streak is continuous, not interrupted, and of a silvery white throughout. I shall describe this in an early number of the "Intelligencer," in some remarks on the extra-European species of Cosmopteryx.

Anorthosia punctipennella. This seems to be allied to Cleodora, and I do not feel confident that it is generically distinct.

Gelechia Agrimoniella. Allied to G. ligulella and G. tæniolella, but quite distinct.

G.? roseosuffusella; a true Gelechia, allied to G. decurtella, (H. S. Tineides, tab. 72, f. 539).

G. Rhoifructella. This has considerable resemblance with our G. Populella; but the anterior wings are broader and blunter, and the anterior segments of the body are not pale.

G.? rubidella; a true Gelechia, somewhat allied to G. ericinella, but smaller, and the anterior wings narrower.

G. deterrentella. I am uncertain about this; it is perhaps allied to our moss-feeding G. affinis. The name deterrentella, must be altered, that name having been used by Zeller for a Sicilian species of the genus (Isis, 1847).

The genus Gelechia, as at present constituted, is very elastic, and includes a variety of slightly different forms. G. subocella is our most discordant species.

Strobisia iridipennella. } These are very different from anything in
S. emblemella. } Europe, and the form of wing in Iridi-
pennella is so peculiar that you are clearly justified in forming a new
genus; it is not improbably a connecting link between Gelechia and Glyphip-
teryx.

Butalis flavifrontella. } Zeller has described in the Linnæa Ento-
B. matutella. } mologica, vol. x., several North American
species of Butalis. His Basilaris, p. 230, is perhaps identical with your
Flavifrontella, and his Impositella, p. 241, may have been described from a
worn specimen of your Matutella.

Stilbosis tesquella. This is a very curious insect, resembling in form of wing Asychna æratella; the ornamentation is more like some of the Lavernæ.

Chrysocorys Erythtiella. This is a true Chrysocorys.

Brenthia Pavonacella. I am disposed to consider this not a Tineina, but rather one of the Pyralidina, allied to Simaethis; but I have never observed the strutting habit in any of our species.

Pigritia laticapitella. This is an obscure looking insect of doubtful location, reminding one most strongly of some of the aberrant Butalidæ.

[Oct.

Descriptions of new Corals in the Museum of the Academy.

BY GEO. H. HORN.

Madrepora perampla.

M. crassè foliata, frondibus profundè digitato-lobatis; lobis latè elongatis (sæpe 2' longis, 4"—8" latis, et 1"—4" crassis). Corallum infra, caliculis confertis (1"—1½" longis); supra tubiformibus, inequalibus (2"—3" longis et 1½" latis) erectis, nunquam nariformibus; stella conspicuâ, duabus lamellis latoribus.

The broad and thick lobes of this species distinguish it from either the *M. alces* or *M. palmata*. The calicles are elongated, and with a distinct star. Immersed cells numerous, equalling in this respect the prominent calicles. The lobes are broad, and arise from a common pedicle, which is very stout (4"—6"); they also show a tendency to further subdivision.

Locality.—West Indies. Dr. J. H. Slack.

Madrepora subaquila.

M. crassè digitata, (lobis 2' longis, 3" latis et 2½" crassis). Corallum infra caliculis confertis (1" longis); supra tubiformibus, inequalibus (2" longis et 1" latis); stella inconspicuâ.

The above description was derived from a branch, two feet in length, of a frond, whose mode of growth was nearly horizontal, judging from the relation of the calicles to the upper surface. This species differs materially from any of the digitato-palmate madrepores heretofore described, in its mode of growth, its large calicles, and its inconspicuous star. Its color is light brownish exteriorly.

Locality.—Unknown.

Madrepora tubigera.

M. prostrata, ramis paulum diffusis, strictè ramosis; ramulis attenuatis (base 3"), apice acutis. Corallum porosum, caliculo apicale elongato, cylindrico (3"—4" sæpe 5" longo et ¾" lato); lateralibus tubiformibus, sæpe labellatis et dimidiatis; stella conspicuâ.

This species is well marked. Its much elongated and delicate apical calicle distinguishing it from all known prostrate branching madrepores.

Locality. Unknown. Dr. T. B. Wilson.

Merulina speciosa.

M. explanato-ramosa, latè undata; margine lobata, unifronte; superne ramis confertis (2—3½" altis). Corallum collibus rotundatis (1" altis), lamellis æqualibus serrulatis.

This species differs from any other of the genus *Merulina* in its branches arising from an explanate base. It grows in large subhemispherical clumps (10"—13" in diameter). The thickness of the explanate portion is often three lines. Its under surface is strongly ribbed, coarsely striate, and granulous.

Locality.—Unknown. Dr. T. B. Wilson.

Agaricia anthropylla.

A. latè explanata, undata. Corallum margine fragile. Superficie inferiore striata; superne laminis erectis (1—3½" altis) coalitis et meandrinis (sæpe 8" longis); collibus elongatis et æqualibus (1—1½" altis et latis) lamellis crassis confertissimis.

Grows in subhemispherical clumps, attached below by its centre. It differs from the other *Agariciæ* in its vertical and coalescing plates. The lamellæ are stout, being greater in thickness than the width of the spaces between them. Corallum thin at the edges, interiorly measuring from three to five lines.

Locality.—Unknown. Dr. T. B. Wilson.

1860.]

Catalogue of Carboniferous Plants in the Museum of the Academy of Natural Sciences, with corrections in Synonymy, descriptions of new Species, &c.

BY HORATIO C. WOOD, JR.

In the ensuing enumeration, it will be seen, that we first give our own decision, followed occasionally by remarks on synonymy, &c.; then the number of specimens with labels previously affixed, in quotation marks; then the locality, as far as known followed either by the name of the donor, or of the collection to which they formerly belonged, and their number in that collection.

The Academy is indebted to Dr. T. B. Wilson for the duplicates of the "Bristol Institute Collection," which form the bulk of the specimens. We do not know whether the numbers on them coincide with the original collection or not.

Those presented by Mr. J. P. Wetherill are especially interesting; many of them being the types of Steinhauer, and all probably having belonged to that author. They are labelled with Steinhauer's names, in the hand writing of Dr. Samuel Geo. Morton.

Besides those here enumerated, there are in the cabinet of the Academy a number of European vegetable reliquæ from various formations. These we had purposed arranging and cataloguing conjointly with the carboniferous; but owing to the press of other engagements must leave them till some future day.

We know of but one other foreign collection in the United States, and the partially arranged American suite of the Academy is large and increasing from day to day. We think it highly important that there should be a standard collection in this country, where investigators may deposit these types, and by comparison with which any disputes that may arise may be settled. The city of Philadelphia, the emporium of the coal trade, is certainly the proper place for this. Moreover, the collection of carboniferous plants, (native and foreign,) is probably much the finest in the country, numbering about a thousand specimens. We would therefore suggest to authors the propriety of sending, as far as practicable, types of their coal plants. We would also ask those living in the coal region, or engaged in the trade, to send specimens to the Academy, and thus forward the best interests of botanical science and practical geology.

Ord. Equisitacea.

Equisetites, Sternb.

E. macrodontus, n. sp.? Stem simple, articulated, obsoletely costate; articulations short, swollen at the joints; sheaths multidentate; teeth longer than articulations, contracting at their base, expanded (and united?) above, then rapidly contracting, and terminating in a greatly elongated setaceous point. (?furnished on one border with a second short setaceous point.) Fructification not preserved.

Our specimen is a flattened impression on coal shales, the terminal sheath only being distinct. It is impossible to say with certainty, whether the second points belong to the large teeth, or whether they are the terminations of a smaller set placed between them.

Calamites,* Suckow.

C. radiatus? Brong.

1 specimen "*C. radiatus*?" In Pennant, Bris. Ins. Coll. No. 64.

C. decoratus, Art.

1 spec. Red Vein, Abersychan. T. B. Wilson, M. D.

2 spec. "*Phylolithus sulcatus*," Pudsy. J. P. Wetherill.

**Calamites* was applied in 1751, (Guett. Mem. Ac. Sc. Par.) to a genus of fossil corals, but as the name is considered pre-Linnæan by authorities in that department of palæontology, and replaced by *Syringopora*, Goldfuss, of course we do not change it as applied to fossil botany.

- C. ramosus*, Art.
 1 spec. *C. "nodosus,"* Sternb. Glamorganshire. T. B. Wilson, M. D.
 1 spec. "*Phyt. sulcatus.*" Near Bradford. J. P. Wetherill.
 1 spec. "*C. ramosus,*" Art. Br. Ins. Coll., No. 69.
 ? 1 spec. "*C. with scars of branches.*" Bris. Ins. Coll.
- C. Cistii*, Brongt.
 1 spec. "*C. with impression of Sigillaria on the back,*" Radstock. Br. Ins. Coll., No. 82.
 1 spec. J. P. Wetherill.
 1 spec. "*C. Cistii ?*" Red Vein, Iron Stone, Abersychan. T. B. Wilson, M. D.
- C. dubius*, Art.
 1 spec. "*Phyt. sulcatus,*" Sheffield. J. P. Wetherill.
- C. cannæformis*, Brongt.
 1 spec. "*Phyt. sulcatus,*" Near Bradford. J. P. Wetherill.
 1 spec. "*Phyt. sulcatus,*" Pudsey. J. P. Wetherill.
 1 spec. "*C. cannæformis.*" Brist. Ins. Coll., No. 63.
- C. approximatus*, Br.
 2 spec. "*C. approximatus.*" In Pennant, Br. Ins. Coll., Nos. 58 and 59.
 1 spec. "*C. approximatus.*" Merthyr. T. B. Wilson, M. D.
 1 spec. "*C. ranceolatus*"!!!
 1 spec. England. Mr. R. E. Griffith.
 1 spec.
- C. Steinhaueri*, Br.
 1 spec. Shelf Fork. T. P. Wetherill.
 1 spec. "*C. Steinhaueri,*" Bris. Ins. Coll., No. 78.
- C. inæqualis*, L. et H.
 1 spec. "*C. ——— (irregular.)*" Pennant, Bris. Ins. Coll., No. 66.

We have identified this species with some hesitation, as its only distinguishing characteristic, (according to its discoverer,) is its irregularity. Our specimen perfectly possesses that peculiarity!

Besides the above, there are quite a number of foreign specimens of this genus in the cabinet, but, unfortunately, their specific characteristics are not sufficiently preserved for their identification.

Ord. ASTEROPHYLLITÆ.

ASTEROPHYLLITES.

- A. equisetiformis*, Brong.
 1 spec. *A. equisetiformis.* England. Br. Ins. Coll., No. 23.

SPHENOPHYLLITES, Brong. (1822).

Sphenophyllum, Brong. (1828). *Rotularia*, Sternb. (1822.)

What influenced Mons. Brongniart in altering his first chosen name, we are unable to divine, unless he did it for the sake of euphony. And why not change Asterophyllites to Asterophyllum, on the same principle? Of course the first name must stand to the exclusion of the more euphonious.

- S. erosa*, nobis.
Sphenophyllum, erosum, L. et H. Foss. Flor. vol. i. tab. 13.
 1 spec. "*Sphenophyllum erosum.*" England. Br. Ins. Coll. No. 15.
- S. angustifolia*, Germ?
Sphenophyllum, angustifolium, Unger. Gen. N. spec. Foss. Plant. p. 71.
 1 spec. England. Dr. T. B. Wilson.

1860.]

TROCOPHYLLUM,* nobis.

Annularia. Sternb.

Annularia being pre-occupied as a generic name, in the sub-kingdom of Mollusca, (Schumacher, Essai Nat. Syst. 1817), we would substitute for it the one given above.

T. fertilus, nobis.*Annularia fertilus*, Sternb.

1 spec. England. J. P. Wetherill, Esq.

Ord. NEUROPTERIDÆ, Br.

NEUROPTERIS, Brong.

N. hirsuta, Lesq.1 spec. (var. *acutifolia*), little seam under Slivin. T. B. Wilson, M. D.1 spec. "*N. acutifolia*," Brong. Br. Ins. Coll. No. 103.1 spec. *N.* ? Br. Ins. Coll. No. 112.1 spec. (var. *cordata*), T. B. Wilson, M. D.*N. auriculata*, Brong.1 spec. "*N. auriculata* with *P. cyathea*." Br. Ins. Coll. No. 127.*N. Cistii*, Brong.?1 spec. "*N. Cistii*. In a nodule of clay iron-stone." Br. Ins. Coll. No. 128.

This form is, perhaps, only a variety of *N. minor*, nobis. But we have not seen a sufficient number of specimens to enable us to decide with certainty.

N. minor, nobis.

Lithosmunda minor, Lloyd, Lithophylacium, 1760. *Felicitis linguarius*, Schloth. Naacht. zur Petref. 1822; ejusdem Flora der Vorwelt, 1804. *N. gigantea*, St. 1821, and *N. gigantea*, *N. Loschii*, *N. rotundifolia*, all of Brong. Prod. 1828.

We do not hesitate in re-uniting these forms, separated by Mons. Brongniart. He says, that he has never seen a specimen of *N. gigantea*, St., yet erects his specimens into new species on such differential characters as, "in the one, the pinules overlap by a little of their border,—in the other, there is a little space between them." Every tyro in recent botany knows that, among the ferns, the same plant varies in its different portions more than this. And we have specimens of this species, less than two inches in length, that do so. That the species of this genus do vary very much, is shown by *N. hirsuta*, Lesq., the several forms of which differ from one another much more than do any of these.†

1 spec. [var. (*flexuosa*). R. E. Griffith.3 spec. "*N. flexuosa*." On slate. Br. Ins. Coll. Nos. 105, 106?1 spec. "*N. gigantea*." In nodule of clay iron-stone. Br. Ins. Coll. No. 115.1 spec. "*N. allied to Loschii*." Br. Ins. Coll. No. 120.1 spec. "*N. allied to Cistii*." Br. Ins. Coll. No. 125.

*Perhaps some naturalists would consider that this genus should receive the name of *Casuarinites*, of which division of the old authors it is a section. But their genera of fossil plants were so vague that all modern authorities agree in discarding them. If we revive *Casuarinites*, *Filicites*, *Phytolithus*, &c., must also come again into use, much to the detriment of an already complicated and difficult branch of science. Moreover, as *A. equisetiformis* may be considered the type of the genus of Schlotheim, his name would rather take the place of *Asterophyllites*.

†Whether botanists agree with us in considering these forms as belonging to one species or not, *N. minor*, nobis, will have to replace *N. Loschii*, Br., and the specific name *minor* thus being pre-occupied, we would suggest *N. parva*, instead of *N. minor*, Lesq. It may be objected by some that *N. minor* is pre-Linnæan, but the tenth edition of his *Systema Naturæ*, in which the binomial nomenclature is employed, was published 1758; and we hold it to be a great injustice to earlier writers to reject their names when they are binomial.

[Oct.

- 1 spec. "N. allied to *flexuosa*." Br. Ins. Coll. No. 126.
 1 spec. "N. *rotundifolia*." Br. Ins. Coll. No. 127.
 5 spec. N. ? Br. Ins. Coll.
 In these last, the specific name is not given,—the naturalist, apparently, not being able to decide as to them.

CYCLOPTERIS, Brong.

- C. obliqua*, Brong.
 1 spec. "*C. obliqua*." Clay iron-stone. Br. Ins. Coll. No. 101.
 ? 1 spec. "*C. flabellata*." Clay iron-stone. Br. Ins. Coll. No. 98.
 ? 1 spec. "*C. ———*? with *N. cordata*." R. E. Griffith.
C. trichomanoides, Brong.
 1 spec. "*C. trichomanoides*." Clay iron-stone." Br. Ins. Coll. No. 99.

C. camptonoura, n. sp.

Leaf petiolate, thin sub-cuneate, with margin apparently slightly lobate and serrate; nerves thin, very flexuous, at base of leaf few in number (about twelve), but rapidly and repeatedly forking, so that at margin they are very numerous and close.

The only specimen of this species which we have seen, has the nerves and interior of the leaf, as well as its base, perfectly preserved; but towards the margin, it becomes so indistinct, that we speak with great doubt as to its lobation and serration. The disposition and flexuosity of its nerves separate it widely, however, from all heretofore known species.

Habitat. England. Cab. of Acad. R. E. Griffith.

C. dilatata, L. et H.

- 1 spec. Clay iron-stone. Sheffield. T. B. Wilson, M. D.
 1 spec. Clay iron-stone. England. T. B. Wilson, M. D.

C. trilobus, nobis.

Sphenopteris dilatata, L. et H. *Adiantites trilobus*, Göep. *Cyclop. dilatata*, Sternb.

As the specific name *dilatata* is pre-occupied, *trilobus* will have to be retained.

- 1 spec. Br. Ins. Coll. No. 16.
 1 spec. "*Sphen. dilatata*." Br. Ins. Coll. No. 85.

NÆGERATHIA.

N. flabellata, L. et H.

- 1 spec. England. R. E. Griffith.

Ord. SPHENOPTERIDÆ, Brong.

SPHENOPTERIS.

S. artemesiaefolia, Brong.

- 2 spec. England. R. E. Griffith.
 1 spec. "*Sphen. artemesiaefolia*, *N. cordata* and *P. polymorpha*." Br. Ins. Coll. No. 68.

S. elegans, Br.

- 1 spec. Br. Ins. Coll. No. 84.
 1 spec.

S. affinis, L. et H.

- 2 spec. "*S. affinis*." Burdiehouse, Edinburgh (Carbonif. limestone). Br. Ins. Coll. No. 87.

S. lunearis, Br.

- 1 spec. England. R. E. Griffith.

1860.]

?*S. polyphylla*, L. et H.

2 spec. "*S. polyphylla*." Br. Ins. Coll. No. 88.

S. latifolia, Brong.

1 spec. "*S. latifolia*." England. R. C. Taylor.

S. obtusiloba, Br.

2 spec. England. R. E. Griffith.

S. Conwayi, L. et H.

2 spec. "*S. Conwayi*." Wales. Br. Ins. Coll. No. 88.

HYMENOPHYLLITES, Göep.

H. furcata, Göep.

1 spec. England. R. E. Griffith.

Ord. PECOPTERIDÆ, Br.

GLOSSOPTERIS, Brong.

G. Browniana, Br.

1 spec. Hawkesburg River, New South Wales. Br. Ins. Coll. No. 129.

The nervation is much closer and finer than in Brongniart's figure; but we have no doubt as to the identity of the two plants.

ALETHOPTERIS, Göep.

A. lonchitidis, Sternb.

1 spec. "*P. candoliana*." Br. Ins. Coll. No. 153.

6 spec. "*P. lonchitica*." In nodules of clay iron-stone. Br. Ins. Coll. No. 154.

1 spec. Philadelphia Library Company.

A. Serlii, Göep.

8 spec. "*P. Serlii*." Br. Ins. Coll. Nos. 155, 161, 159, 162, 166, 167.

1 spec. "*P. Serlii*." Somersetshire.

3 spec. "*P. Serlii*." Camerton. Br. Ins. Coll. Nos. 158, 160.

2 spec. "*P. Serlii*." Radstock. Br. Ins. Coll. No. 104.

A. heterophylla, Göep.

1 spec. "*Asterophyllites equisetiformis* with *P. heterophylla*." Br. Ins. Coll.

PECOPTERIS, Brong.

P. oreopterodes, Br.

1 spec. "*P. oreopteroides*." Br. Ins. Coll. No. 153.

? 1 spec. "*P. villosa*." Br. Ins. Coll. No. 142.

P. polymorpha, Br.

1 spec. "*P. polymorpha*." Br. Ins. Coll. No. 144.

1 spec. "*P. polymorpha*." Sheffield.

? 1 spec. "*Pecopteris*." Br. Ins. Coll. No. 175.

1 spec. "*P. Miltoni*." Br. Ins. Coll. No. 140.

1 spec. "*P. Cistii*." Radstock. Br. Ins. Coll. No. 151.

1 spec. "*P. pteroides*?" Br. Ins. Coll. No. 138.

P. lepidorachis, Br.

1 spec. "*P. lepidorachis*." Br. Ins. Coll. No. 111.

P. unita, Br.

1 spec. "*P. unita*." Br. Ins. Coll. No. 118.

P. Pluckenetii, Br.

1 spec. "*P. Pluckenetii*." Br. Ins. Coll. No. 147.

P. pennæformis, Br.

1 spec. "*P. pennæformis*." Br. Br. Ins. Coll. No. 141.

[Oct.

- P. dentata*, Br.
 1 spec. "*P. dentata*." Br. Ins. Coll. No. 136.
 ? 2 spec. Br. Ins. Coll. Nos. 135 and 174.
- P. cyathea*.
 3 spec. "*P. cyathea*." Br. Ins. Coll. Nos. 148 and 152.
 1 spec. "*P. villosa*." Br. Ins. Coll. No. 149.
- P. arborescens*, Br.
 2 spec. "*P. arborescens*." Br. Ins. Coll. Nos. 132 and 133.
- P. muricata*, Br.
 7 spec. Pembrokehire. Br. Ins. Coll. Nos. 131-160.

Ord. LEPIDODENDRÆ.

LEPIDODENDRON, Sternb.

- L. obovatum*, St.
 ? spec. "*L. elegans*." Br. Ins. Coll. No. 190.
 1 spec. "*Phytolithus cancellatus*." York. Mr. J. P. Wetherill.

L. dichotomum, Sternb.???

We label these specimens thus, solely on account of their being so labelled in England. Sternberg first described the plant with the name of *Lycopodites dichotomum*, giving an exceedingly indefinite figure and a worse description. Brongniart, in his prodrome, placed it in its proper genus,—changing its specific name to *Sternbergii*. In his Vers. ii. Sternb. again figured it, under the name of *Lep. dichotomum*. To this work we have not been able to gain access. But Unger, in his Genera and Species of Fossil Plants, has given a description, drawn, we suppose, from it. It is worthy of remark that this description does not agree with the figure first published by Sternberg! Nor does either of the two figures in the Fossil Flora, which also differ one from another!! In such a chaos, we are unable to decide what are the specific characters, or even whether there are any. If the two figures published by Lindley & Hutton belong to the same plant, we see no character by which *L. dilatatum*, of the same authors, can be separated from them. From some unknown cause, Unger does not notice *L. dilatatum*, neither as a good species, nor yet as a synonym.

- 4 spec. "*L. Sternbergii*." England. T. B. Wilson, M. D.
 2 spec. "*L. dilatatum*." England. T. B. Wilson, M. D.

- L. aculeatum*, Sternb.
 1 spec. "*L. obovatum*." England. ?
 1 spec. England. ?

- L. imbricatum*, Sternb.?
 1 spec. "*L. allied to veltheimianus*." Br. Ins. Coll. No. 187.

L. caelatum, Sternb.

Sagenaria caelata, Br., *Phytolithus cancellatus* of Steinhauer, Phil. Trans., vol. i. (new series,) pl. 6, fig. 2, 1818; but not *Phyt. cancellatus* of Martin, Petrefacta Derbiensa, pl. 13, fig. 1, 1809, nor *Phyt. imbricatus* of same author, to which Steinhauer refers as identical with his *Phyt. cancellatus*, nor either of the two species referred to by Steinhauer, in Parkinson, Organic remains, pl. 1, fig. 6, pl. 2, fig. 4. We have not been able to find the description or names for these in Parkinson's Org. Rem. But as there are no descriptions of, or names to the plates, and also no index to the work, they may be named somewhere incidentally; which, in such a mass of text, we have not been able to find. Never having seen either Sowerby's British Mineralogy, or Volkman, Silos. Subterr., we can not say as to the identity of *Phyt. cancellatus* of those authors. But we have scarcely a doubt that they also differ, specifically, from all others, and amongst 1860.]

themselves. In such a case as this, of course it is useless to attempt to revive the old name.

1 spec. "*Phytolithus cancellatus*." (Steinhauer's type.*) Astercliffs, York. J. P. Wetherill.

L. rimosum, Sternb.

1 spec. "*L. allied to rimosum*." Frenchay. Br. Ins. Coll. No. 199.

1 spec. "*L. allied to rimosum*." England. T. B. Wilson, M. D.

1 spec. "*L. rimosum*." Br. Ins. Coll. No. 198.

L. ———?

25 spec. of branches, variously labelled, and mostly from Br. Ins. Coll.

Besides the above, there are quite a number of specimens belonging to the genera *Lepidodendron* and *Sigillaria*, with various labels, but which do not possess any specific character.

ULODENDRON.

U. parmatum, nobis.

Phytolithus parmatum, Steinhauer. Amer. Philos. Trans. vol. i. (new series,) pl. 7, fig. 1. Not *Phyt. parmatum* of same author, pl. 6, fig. 1.

1 spec. "*Phytolithus parmatum*" (Steinhauer's type). Shelf, near Bradford. J. P. Wetherill.

CYCLOCLADIA, L. et H.

C. ? Huttonia, nobis.

Phytolithus parmatum, Sternb. Am. Phil. Trans. pl. 6, fig. 1. *Cyclocladia majus* and *C. minor* of Lind. et Hutt.

1 spec. "*Phyt. parmatum*" (Steinhauer's type). Shelf, York. J. P. Wetherill.

If this genus, as is very probable, should prove to be merely the decorticated state of *Ulodendron*, this plant will be *Ulodendron Huttoni*, nobis.

SIGILLARIA,† Brongt.

Sub-genus CLATHARIAE, Br.

S. ornata, Br.

2 spec. "*S. ornata*." Br. Ins. Coll. No. 238.

1 spec. "*S. serlii*," Br. Ins. Coll. No. 240.

Sub-genus PHITODOLEPIS, Brong.

S. notata, Wood.

Phytolithus notatus, Steinhauer. *S. elliptica*, Br. (*S. notata*, Br.)?

We have but little hesitation in uniting these forms. If *S. notata*, Brong., is distinct from *S. elliptica*, Brong., it is also distinct from *Phytolithus notatus*, Steinhauer, which is identical with *S. elliptica*. The sharp angles and prolongations from them, mentioned by Brongniart as characterizing *S. notata*, Brong., do not exist, either in Steinhauer's figure, or in specimens in possession of the Academy, which, in all probability, are Steinhauer's types.

* Were it not for the possession of this type, we would not, perhaps, be warranted in giving so positively the synonymy of this species; but having this, we are enabled to decide regarding the points above given.

† In our classification of this genus we shall follow Goldenburg (*Die Pflanzen, des Steinkohlen, von Saarbrück, 1857*), and reduce the genera indicated by us (*Pr. A. N. S.* 1860), to the rank of sub-genera. Although we have some hesitation as to the propriety of this, yet it is, perhaps, the better course, as these sub-genera approximate in indefiniteness to the genus *Sigillaria*. They have, without doubt, the same value as *Syringodendron*, and, in our opinion, the *Sigillaria* constitutes an order, and the present sub-genera the genera of it; but the weight of authority is against this. Under this classification the American forms described by us will stand—*S. perplexa*, *S. camptotaenia*, *S. solanus*, *S. magnifica*, *S. psilophloeus*.

We have, however, specimens so directly intermediate between *S. notata*, Br., and *S. elliptica*, Br., that we think the two species must be united. If not, *S. notata*, Br., will require a new name, and we would suggest *S. Brongniartii*.

2 spec. "*Phytolithus notatus*." Yorkshire. J. P. Wetherill. Probably part of Steinhauer's collection, and labelled in the same hand writing as his other types, as well as presented by the same individual.

1 spec. "*S. reniformis*?" T. B. Wilson, M. D.

S. orbicularis, Brong.

1 spec. "*S. orbicularis*." Br. Ins. Coll. No. 242.

? 1 spec. Br. Ins. Coll. No. 243.

This specimen has the scars very much closer than in any figure we have ever seen; but we scarcely doubt its belonging to this species.

S. transversalis, Brong.

1 spec. "*S. transversalis*." Br. Ins. Coll. No. 205.

S. pachyderma, Brong. (Decorticated.)

1 spec. "*S. pachyderma*." Radstock. Br. Ins. Coll. No. 214.

S. reniformis, Brong. (Decorticated.)

6 spec. "*S. reniformis*." Br. Ins. Coll. Nos. 220, 222, 223.

S. nodosa, nobis.

Favularia nodosa, L. et H.

1 spec. "*Favularia nodosa*." Br. Ins. Coll. No. 253.

S. tessellata, Brong.

1 spec. "*Phytolithus tessellatus*." Shelf, near Bradford. (Steinhauer's type.) J. P. Wetherill.

S. Knorii.

2 spec. England. R. E. Griffith.

1 spec. "*S. elegans*." Br. Ins. Coll. No. 241.

1 spec. Aberyschan. R. C. Taylor.

Sub-genus *DITAXIS*, Wood.

S. alternans, L. et H.

1 spec. "*S. allied to alternans*." Br. Ins. Coll. 218.

ULODENDRON, Rhode.

U. parmatum, nobis.

Phytolithus parmatum, Steinhauer.

LEPIDOSTROBUS, Brong.

L. variabilis, L. et H.

2 spec. England. R. E. Griffith.

Description of Several New Species of Plants.

BY S. B. BUCKLEY.

Trillium Texanum.—Leaves ovate-oblong, obtuse, sessile, smooth, or subpubescent, longer than the peduncle. Petals white, ovate-lanceolate acute, nearly equal or shorter than the sepals. Sepals oblong-ovate, obtuse. Plant 6–9 inches high, leaves $1\frac{1}{2}$ –2 inches long, 5 lines wide. Peduncle 6 lines long. Sepals 6 lines long, and 2 lines wide. Such is the size of a medium specimen. Flowers in March.

Banks of streams and low grounds. Panola County, Texas.

Æsculus arguta.—Fruit covered with prickles. Stamens erect, or slightly 1860.]

curved, much longer than the pale yellow corolla. Calyx campanulate, divisions obtuse, pedicels short, whole panicle subpubescent. Flowers dense. Leaflets 7, glabrous, ovate-lanceolate, acute at both ends, sharply and unequally serrate. Shrub 3-5 feet high, with a smooth bark, above Nachitoches, Louisiana. Panicles 4-6 inches long. Leaflets 2-4 inches long.

Hills in the vicinity of Larissa, Texas.

Halesia reticulata.—Leaves broad-ovate, pubescent on the midribs, scabrous, obscurely dentate, teeth small, acute, under surface of leaves pale, much reticulated. Fruit 4-winged, two lateral wings double in width the others. Style long, mucronate. Leaves 4-5 inches long and 2-3½ inches broad. Fruit smooth, 1-1½ inches long, and 6-7 lines broad. Pedicels 5-7 lines long. Small trees, branches smooth, bark of trunk light gray, furrowed.

Banks of streams tributary to the Red River, above Nachitoches, Louisiana.

Fraxinus Nuttallii.—Leaflets 5-7, lanceolate, acute at both ends, irregularly toothed, upper surface smooth, under surface pale and subpubescent along the midribs, short-stalked, petioles long, glabrous, fruit ovate-lanceolate, three-winged acute at both ends, branches smooth, bark of trunk gray, and furrowed. Fruit about 2 inches long, by 5 lines broad. Leaflets 3-4 inches long by 1 inch broad, sometimes unequal at base.

In swamps, Wilcox County, Alabama. Small trees about 6 inches in diameter, and 20-25 feet high. As Nuttall had not material for a complete description, none can tell what is meant by his *Fraxinus triptera*; but as possibly he may have intended the tree now described, I call it Nuttall's Ash.

Carya Texana.—Leaflets 7-9, broad-ovate, or ovate-lanceolate, sharply serrate, smooth on both sides, paler beneath, acute at apex, subobtusely or acute at base. Staminate and pistillate catkins subpubescent. Fruit globular, slightly 4-angled. Shell thin, separating to the base. Trees three to four feet in diameter, and forty to fifty feet high. Bark of trunk very thick, deeply and irregularly furrowed, not scaly. Leaflets 6-8 inches long, and 2-3 inches broad.

Dry soil. Common in Upper Louisiana, and in Texas extending as far west as Atacosa County. "Thick bark, hickory."

Quercus Shumardii.—Leaves oblong, or obovate in outline, smooth, deeply sinuate-pinnatifid, sinuses broad, convergent, 3-5 on each side, lobes many-toothed, teeth sharply and setaceous acute. Acorn globular, or ovoid-oblong, subacute, cup shallow, slightly turgid, scales acute. A large tree with shining deep green leaves, those on the upper portion of the tree being much and deeply lobed. The lunes are generally deeper near the petiole than towards the apex of the leaf. Acorn resembles *Q. rubra*, but is more acute, 1-1½ inch long, and 6 lines to 1 inch broad. Limbs, trunk and branches much like the water-oak, *Q. aquatica*. Wood yellowish-white, fine grained, and esteemed for rails, boards, and the frame-work of buildings. I have measured specimens which were six feet in diameter, with an estimated height of 70-80 feet. Its leaves retain their greenness long after the first frosts, when those of the frost-oak, black-jack and scarlet-oak are dead.

It occurs in Upper Louisiana, Eastern and Middle Texas. Shumard's Oak. In honor of Dr. B. F. Shumard, State Geologist of Texas.

Quercus Texana.—Leaves ovate-oblong in outline, smooth, both sides deeply sinuate-pinnatifid, with broad, divergent sinuses, 3-5 on each side, lobes 1-3 toothed, teeth acute setaceous. Nut ovoid, oblong, acute, cup hemispherical, slightly turgid, scales acute, closely appressed. Tree 3-5 feet in diameter, and 60-70 feet high, branches smooth, bark of trunk of a dark slate color, slightly furrowed, very like *Q. phellos* and *Q. aquatica*, with which it is often associated. Lower leaves of this tree with lobes often truncate, while the upper leaves have deep, broad, divergent sinuses, and the

[Oct.

upper lobes prolonged somewhat like those of *Q. falcata*. Like the water and willow-oaks, its leaves are green during the first of winter. Acorn about 1 inch long, and $\frac{1}{2}$ – $\frac{3}{4}$ inch broad. Leaves 4–8 inches long by 3–5 wide. A beautiful tree, with dense, deep green foliage. Wood close-grained, white, or of a light red color, and used for similar purposes as the Shumard Oak.

Quercus Durandii.—Leaves obovate, entire, or slightly 3-lobed at apex, with rudiments of one or more lobes at the margins, lobes very obtuse. When mature, smooth on both sides. Acorn round, or ovoid rotund. Cup very shallow, scales acute, closely appressed. Leaves 3–4 inches long, 1–2 inches wide. Acorns $\frac{1}{2}$ – $\frac{3}{4}$ inch long, about $\frac{1}{2}$ inch wide, scarcely one-eighth of an inch being included in the cup. Tree 2–3 feet in diameter, and 40–50 feet high, bark of trunk, and branches light gray, scaly, resembling the white oak (*Q. Alba*). The leaves are mostly entire, varying from obovate to oblong-ovate. Wood white, close-grained, and very tough. It is often worked into splints for baskets to hold the picked cotton. Used for farming utensils, and sought after to make screws for cotton gins. Called "Basket Oak," and "Bastard White Oak."

Wilcox County, Alabama, Upper Louisiana, and Middle and Southern Texas. Durand's Oak. In honor of E. Durand, of Philadelphia.

Quercus annulata.—Leaves broad-ovate, entire or irregularly and sparingly lobed, sinuses shallow, divergent lobes very obtuse, upper surface smooth and bright green, under surface pale, smooth, or subpubescent, petioles short. Acorn oblong-ovoid, with a depressed ring near the apex. Style cylindrical, long, truncate, cup shallow, one-third the length of the acorn. Acorn 5–9 lines long, and 3–4 lines broad. Leaves 2–4 inches long, mostly lobed. Bark of trunk and branches light gray, scaly. Small tree or shrub, bearing a great abundance of acorns.

Common on the rocky limestone hills in the vicinity of Austin, Texas.

Note on Quercus coccinea.

In Upper Louisiana and in Eastern Texas, last autumn, I often found *Q. coccinea* with acorns depressed at the summit and leaves agreeing exactly with Michaux's figure of that species, the accuracy of which has been questioned by some botanists. It had not the scarlet leaves after frost which is said to be characteristic of that species. Its bark is a dark gray or slate color, deeply furrowed, and wood porous, of a reddish cast, and esteemed of little use.

Myrmica (Atta) molefaciens, "Stinging Ant," or "Mound-Making Ant," of Texas.

BY S. B. BUCKLEY.

Neuter.—Color reddish-brown, labium brownish-black, mandibles subfalcate serrate, triangular, blackish-brown. Antennæ two-jointed, the anterior joint clavate, hairy, head disproportionately large, upper side rotund, occiput truncate, under side of head longitudinally concave, with a dark line extending along the middle of the cavity, mentum somewhat hairy, eyes black, thorax triangular, compressed, prothorax large, with a slight knot on the upper part of each side, metathorax upper side two-spined, pedicel long, two-knotted, anterior knot inclined forwards, legs long, slender, tarsi two-clawed, abdomen smooth, smaller than the head, ovate, slightly hairy near the sting. Female has head like the neuter, excepting its front is slightly hooded, thorax oval, or rhomboidal in outline, knotted, compressed, slightly hairy, metathorax has rudimentary spines, abdomen ovate, smooth on the upper part, with a few scattering hairs on the under side. Wings not extending beyond the abdomen.

These ants are the most numerous of any in Texas, where they have frequent

abodes in paths and roads, on the prairies and in the fields and woods. They form their habitations in the ground, where they have many apartments connected by tunnels about an inch in diameter. Some of their cellars have deep shelves on all sides, where their food is stored. Their rooms are rarely found at a greater depth than six feet, nor do their cavities often extend over a greater area than from four to six feet diameter, over which, at the surface, there is generally a more or less conical mound, sometimes as high as three feet, with a principal entrance at its summit. This mound is merely the dirt brought to the surface when they are making their tunnels and cellars. Many of their dwellings have no mound at the surface, it having been washed away by rains, and also either levelled by the hand of man or the feet of animals. We first noticed the exodus of their males and females on the twenty-seventh of last July, when the whole community were in a violent commotion. Then the males and females issued from their doors in great crowds. Some flying away, while others were seized by the neuters and dragged struggling off. During the following month the females began to form new columns, commencing by a few neuters joining a female and digging a small hole to shelter her. This is daily and nightly enlarged, until its inhabitants and rooms become so numerous that it also sends forth swarms of females, and neuters to found new cities.

Their chief food is the seed of various plants and grasses, but, like most ants, they also eat flesh. They boldly attack all beetles and worms who venture near their doors, when great numbers seize the unlucky intruder, and, if it be a beetle, its legs are seized and body covered with ants, who bite and sting at the same moment, by which the beetle is soon killed, unless at the first he flies; and we have seen beetles fly away with ants hanging to their legs, nor did the ants let go, at least while the beetle was in sight. The stinging ant does not work during the hot sunshine; but they labor at night and during the cool of the day. On cloudy days their work continues. Indeed, night is the busy time, among all or nearly all of the ants of Texas. Seeds of various grasses and flowers are the principal food of the stinging ants, who, in seed-time during the summer, lay up stores of food for the winter season, when "Northers" come and storms rage, and confine the ants within doors sometimes a week or more at a time. One of their habitations in Dr. Linsecom's garden, at Long Point, in Washington County, Texas, was dug into to the depth of about two feet, and large quantities of water thrown in to destroy the ants. They recovered, and for several days after were busily engaged in bringing their store of seeds to the surface to dry. A part of these, by heat and moisture were sprouted, and unfit for preserving for future use, and these, when dry, were not taken back to their cellars. Most of the seeds were those of a species of geranium (*Erodium Texanum*). Miss Sallie Linsecom, a daughter of the Doctor, went into the garden daily to see the ants bring out their store of seeds, which she told us were more than half a bushel.

Mr. C. G. Caldwell, who resides on the Colorado river, about eighteen miles below Austin, has lately been digging in order to exterminate a nest. While there, recently, we became acquainted with the shape of their cellars and winding tunnels. Their apartments are rarely more than six or eight inches in diameter, with shelves, as before stated. Often a tunnel descends vertically to a room, then horizontally to another apartment, then up nearly perpendicularly to other cells, which last rarely become wet even by very heavy rains. Mr. Caldwell assured us that he had often seen their shelves full of seeds. By such an arrangement of their rooms they avoid storing seeds in heaps where they would be apt to spoil. During a very heavy rain at Cedar Creek Post-office, in Bastrop County, that whole region seemed to be flooded; and we waited with some impatience for the storm to abate, in order to see its damage to the ant,—the stinging ants having many nests in a prairie, which the rain had covered with water. Next-day we saw them bringing to the surface

[Oct.

grass seeds to dry from their cellars. Every ant-hill in the vicinity had more or less seed strown around their outer doors. A few days later we visited the same locality, and the seeds had disappeared,—having doubtless been stored away again by the ants.

They cannot carry as heavy burdens as the cutting ant (*Myrmica Texana*), nor do they, like that ant, place their load upon their backs, but carry it with their mandibles and head; and, whatever they wish to take home, is, if too large, cut into segments to be thus transported.

The stinging ants are generally peaceable in their habits, rarely fighting with other species, or among themselves. In one or two instances we have noticed two different houses, situated a few rods distant, connected by a well beaten path, along which ants were passing back and forth, from one house to the other, in the greatest harmony; but one of these may have been a colony founded by the other.

Once we noticed two of these ants, which probably belonged to different houses, combating in an ant-path, along which a few ants were passing to and fro. Occasionally one of these would stop a moment, look at the contest and pass on. The struggle was obstinate and long. We became tired of the sight, and, after considerable trouble, succeeded in parting them,—both being quite lame. One we put far away, and left the other walking slowly around in search of his enemy, when, on reaching the path, he seized the first ant he met, and the fight was more animated than ever,—one of the parties being robust and untired. Suddenly they stopped, looked a moment, and then began caressing each other, soon after which they started side by side for their town, not far distant. It seemed as if the first fighter, blinded by rage, had lastly fought his own brother. We have been stung several times by them, and think the pain about equal to that caused by the sting of the honey-bee.

Descriptions of New Carboniferous Fossils from Illinois and other Western States.

BY F. B. MEEK AND A. H. WORTHEN,

Of the Illinois State Geological Survey.*

ZOOPLYTA.

SPHENOPOTERIUM, (new gen.)

σφην, a wedge; *ποτήριον*, a cup.

Corallum free, (or attached?) cuneate or irregularly subturbinate, and provided with a few large inseparable cells, which increase in number by lateral and interstitial development. External wall rather dense, but perforated by a few pores, which seem to terminate in the cancellated substance of the coral without reaching the cells; surface marked by numerous fine, anastomosing striæ. Cells circular, or when crowded, more or less angular; without diaphragms, columella, or well developed rays, their walls being merely marked by distinct vertical striæ, and pierced by numerous pores which appear

*Illustrations with more extended descriptions, remarks, &c., to appear in the forthcoming report of the Illinois survey.

NOTE.—While investigating the fossils described in this and our paper published in the last number of the Proceedings, we have been placed under many obligations to the Secretary of the Smithsonian Institution, for the free use of the extensive collections of works on Palæontology, Geology, and various branches of Natural History, belonging to the Smithsonian library. Also, for the use of rooms in the Institution, and for access to the large and rapidly accumulating geological and palæontological collections in the Smithsonian Museum.

1860.]

to terminate in the porous substance of the corallum, between the cells, without directly connecting them.

This small group of corals appears to be more nearly related to *Cyathocoris*, of Edwards and Haime, than to any other genus, either recent or fossil, with which we are acquainted. It differs, however, in having the outer walls perforated, and in being destitute of distinct rays, as well as in the peculiar wedge-like form of the base of the corallum, which is also usually, if not always, free instead of attached. We regard the first of the following species as the type of the genus.

SPHENOPOTERIUM OBTUSUM.—Corallum short, abrupt cuneiform, wider than high; base carinate, nearly straight, or very slightly sinuous in the middle; sides expanding rapidly upwards from the keel. Cells from four to about nine, comparatively large, generally rather deep, conical, and where not more than four or five, rounded, and separated by thick interstices, but becoming angular, with thin intervening partitions, where more crowded. Surface striæ fine, and showing a tendency to converge towards the middle of the base, often anastomosing, so as to form a kind of shagreen-like style of ornament.

Length or height of a large specimens with nine cells, inch; breadth, inch; thickness, inch; diameter of one of the cells, 0.29 inch.

Locality and position.

SPHENOPOTERIUM COMPRESSUM.—Corallum compressed, wider than high, carinate on each lateral margin, and apparently retaining a scar of attachment at the middle of the base; sides sulcate between the cells, widening rapidly upwards on the edges, and very gradually on the sides. Cells three or more, comparatively large, rather deep, rounded, with thin walls; arranged in a row parallel to the longer transverse diameter of the corallum. Surface finely shagreened by the anastomosing of the striæ.

Length or height, 0.57 inch; breadth, 0.93 inch; thickness, 0.35 inch; diameter of cells, 0.26 inch.

It is possible this may be a variety of the preceding species, though its compressed form, thinner walls, and lateral carinæ, give it quite a different aspect.

Locality and position. Same as last.

SPHENOPOTERIUM ENORME.—Corallum small, subglobose, obtusely subturbinate; rounded, and apparently retaining some remains of a scar of attachment at the base. Cells four or more, rather irregularly disposed, circular, and moderately deep. Surface slightly more coarsely marked than the last, but otherwise similar.

Height, 0.45 inch; transverse diameter about 0.43 inch; breadth of cells, about 0.18 inch.

Locality and position. Rockford, Indiana, from beds probably of upper Devonian age, but containing Carboniferous *Goniatites*.

SPHENOPOTERIUM CUNEATUM.—Corallum compressed, cuneate, longer than wide, base sharp, a little rounded on the lateral edges. Cells from two or three, to five or six, rather deep, arranged alternately on each lateral edge, and directed obliquely outward and upward; rounded or somewhat oval at the aperture, and more or less compressed towards the base; sometimes having one or two slightly prominent ridges extending part of the way up the sides; punctæ of the walls numerous and distinct. Surface striæ fine, closely arranged, rather regular, and minutely crenulate, directed obliquely inward and downward from the cells, and passing more or less nearly parallel to each other to the base, on the lower flattened half.

Length, 0.75 inch; breadth, 0.43 inch; thickness, 0.21 inch; diameter of cells, about 0.15 inch.

Locality and position. Spurgen Hill, Ia. From beds generally considered on parallel with the Warsaw Limestone.

[Oct.

ECHINODERMATA.

ASTERIDÆ.

Genus PALASTERINA, McCoy.

Subgenus SCHOENASTER.

The specimens of the beautiful star-fish, upon which we propose to found this subgenus, are unfortunately not in a condition to enable us to work out fully the details of its structure. As far as can be determined, however, it agrees in most of its characters with *Palasterina*, though it differs from the typical species of that genus (*Uraster primævus*, Forbes) in having the adambulacral plates arranged with their longer diameter directed obliquely outward, instead of at right angles to that of the rays. This oblique arrangement, or lateral imbrication of these pieces, gives to each range, as seen from below, a peculiar twisted or rope-like appearance, which suggested the name *Schoenaster* (σχοινός a rope, ἀστέρας, a star.)

Although we place it for the present as a subgenus under *Palasterina*, we think it more than probable that when better specimens can be examined, it will be found to present other differences of sufficient importance to entitle it to rank as a distinct genus, in which case it can retain as a generic name that by which we have designated it as a subgenus.

PALASTERINA (SCHOENASTER) FIMBRIATA.—Body depressed, pentagonal, the angles being extended into narrow, acutely pointed rays or arms, which are convex above, and about equal in length to the diameter of the disk. Upper side of the disk and arms composed of small, solid, convex, or somewhat tumid plates. Ambulacral furrows deep, rather narrow, and bounded on each side by the single row of oblique adambulacral pieces, which also form the sides of the arms, beyond the disk, where some six or seven of these pieces occupy a space of 0.35 inch. Disk apparently not provided with a regular range of marginal pieces; concave in outline between the rays, where it is, like the sides of the arms, fringed by a single range of short, lanceolate spines.

The plates forming the upper side of the rays near the disk, are hexagonal, pentagonal, or irregular in form, and consist of about five or six ranges between the marginal rows, with a few much smaller intercalated pieces. Farther out they gradually pass into two mesial ranges of oblong, alternating pieces, arranged with their longer diameter parallel to that of the ray; and two series of much smaller, pentagonal or hexagonal alternating plates on each side, between the middle ranges and the adambulacral rows. Towards the extremities of the rays, these two ranges of small pieces on each side diminish in size, and at last become obsolete, leaving only the adambulacral and middle ranges.

None of the specimens are in a condition to show the form and arrangement of the plates forming the disk, nor the position of the vent and madreporiform plate. Near the extremities of the arms the dorsal pores, which are comparatively small, pass chiefly between the ends of the oblong plates, forming the two mesial ranges; but farther in, towards the disk, they seem to be somewhat irregularly distributed. There appear to be five bilobate, oral pieces, but we suspect each of these is divided by a close fitting suture, so as to make ten in the entire series.

Greater diameter, 2.37 inches; lesser do., 0.89 inch; breadth of ambulacral furrows, about 0.10 inch; length of marginal spines, 0.07 inch.

Locality and position. St. Clair county, Illinois. St. Louis Limestone of Lower Carboniferous series.

1860.]

MOLLUSCA.

BRACHIOPODA.

Genus CHONETES, Fischer.

CHONETES PLANUMBONA.—Shell of medium size, nearly semicircular; length from two-thirds to three-fourths the breadth; hinge line about equalling the greatest breadth; front rounded, or forming with the sides a nearly semicircular curve; lateral margins intersecting the hinge at right-angles, or sometimes very slightly sinuous near the ears. Ventral valve gibbous, most convex in the middle, and flattened at the umbo, destitute of any traces of a mesial sinus; ears a little compressed; cardinal margin sloping slightly from the beak, on each side of which it is armed with five or six spines; area of moderate breadth; foramen broad, triangular, the upper angle being rounded. Dorsal valve concave, or following nearly the curve of the other valve; cardinal process moderately prominent, nearly or quite closing the foramen of the opposite valve; interior without a prominent mesial ridge, rather distinctly granulose, the granules being arranged in radiating lines; visceral scar rather large; impressions of adductor muscles small and deep. Surface of both valves apparently smooth or only marked by obscure undulations of growth, but showing under a lens nearly obsolete traces of depressed rounded radiating striae, crossed by minute concentric lines or wrinkles.

Length 0.42 inch; breadth 0.49 inch; convexity 0.16 inch.

Locality and position. Monroe County, Illinois. Keokuk Limestone of Lower Carboniferous series.

Genus PRODUCTUS, Sowerby.

PRODUCTUS NANUS.—Shell very small, nearly hemispherical; hinge about equalling the greatest breadth; anterior side regularly rounded; sides intersecting the hinge nearly at right-angles. Ventral valve gibbous, without any traces of a mesial sinus; ears triangular, convex, and moderately distinct from the swell of the visceral region; umbo convex, incurved, and apparently extending slightly beyond the hinge line. Surface ornamented by comparatively large, rounded, radiating costae, which more than equal the depressions between, on the convex part of the valve, but decrease in size, and become more numerous by division, and the implantation of others between, around the anterior slope; crossed by numerous very fine concentric striae, only visible under a lens. The visceral region is also marked by moderately distinct rather regular wrinkles, while the bases of a few scattering spines are seen on the anterior slope. (Dorsal valve unknown.)

Length 0.37 inch; breadth 0.45 inch; convexity 0.25 inch.

Locality and position. Jefferson County, Iowa. Lower Coal measures.

PRODUCTUS PARVUS.—Shell rather small, nearly hemispherical, without any traces of a mesial sinus; length and breadth nearly equal; hinge about equalling the greatest breadth; front rounded; sides sometimes slightly sinuous near the ears. Ventral valve gibbous, regularly arched, not depressed in the visceral region; beak incurved a little beyond the hinge; ears small, convex, nearly rectangular at the extremities of the hinge, moderately distinct from the swell of the umbo. Dorsal valve deeply concave, particularly in the middle and towards the beak. Surface of both valves ornamented by numerous small, rounded, rather closely arranged, occasionally bifurcating striae, about six of which may be counted in the space of one-tenth of an inch. Spines erect, apparently confined to the ventral valve, each ear of which supports some seven or eight, while there are usually about three times that number scattered around the anterior and lateral slopes. Sometimes very

[Oct.

obscure traces of small concentric wrinkles are indistinctly visible near the beak and on the ears, particularly of the ventral valve.

Length 0.59 inch; breadth 0.60 inch; convexity of ventral valve 0.34 inch.

This shell might be mistaken for an imperfect specimen of *P. fasciculatus* of McChesney, from which species it differs, however, in having finer striae, a more deeply concave dorsal valve, and in being always destitute of a mesial sinus in the ventral valve. When good specimens of these species can be compared they may be distinguished at a glance, by the more extended anterior, and the fasciculate character of the striae upon that part of the shell in *P. fasciculatus*.

Locality and position. Chester, Illinois. Chester, Limestone of Lower Carboniferous series.

PRODUCTUS SORTUUS.—Shell small, gibbous, wider than long, hinge line rather more than equalling the breadth of the central part of the valves; anterior side rounded, or sometimes a little flattened; sides rounding to the front, and somewhat contracted near the ears. Ventral valve gibbous, rather strongly arched, moderately produced, and presenting scarcely any indications of a sinus; ears triangular, convex, or somewhat vaulted, and separated from the swell of the umbo and the prominent visceral region, by a rather distinct rounded depression; beak convex, incurved and apparently extending a little beyond the hinge line. Surface marked by numerous fine, regular, radiating striae, about seven of which may be counted in the space of one-tenth of an inch; crossing these there are on the visceral region small, irregular concentric wrinkles; a few scattering bases of spines are also sometimes seen on the anterior slope (in casts), where two or three of the striae become more prominent than the others. (Dorsal valve unknown).

Length, from beak to anterior slope, 0.36; do., from beak to anterior margin, measuring over the curve of the ventral valve, 0.45 inch.

Locality and position. Alton, Illinois. St. Louis Limestone, of Lower Carboniferous series.

Genus RHYNCHONELLA, Fischer.

RHYNCHONELLA SUBTRIGONA.—Shell rather above medium size, trigonal subglobose, wider than long, truncated in front, and on each postero-lateral slope; anterior margins of the valves sharply and deeply serrated. Ventral valve nearly flat, or arching a little from the umbo along the middle towards the front, on each side of which the antero-lateral margins are at first elevated, then very abruptly deflected toward the other valve; front curving down nearly at right-angles to the plane of the valve, and extended so as to fill a broad, deep, rather rounded sinus in the front of the other valve; postero-lateral margins very abruptly deflected downwards; beak small, rather pointed, incurved, and extended somewhat beyond that of the other valve; mesial sinus broad, shallow, undefined, and not extending more than half-way back from the front. Ventral valve gibbous, elevated in the middle near the anterior side, thence sloping abruptly, with a moderately convex outline to the beak; antero-lateral and lateral margins curving strongly to meet those of the opposite valve; mesial fold not well defined. Surface of each valve ornamented by from eighteen to twenty-four rather rounded plications, about four or five of which occupy the mesial sinus and fold; fine obscure, concentric striae are also seen on well-preserved specimens.

Length (of a medium-sized rather gibbous specimen), 0.90 inch; breadth 0.98 inch; convexity 0.91 inch.

Locality and position. Keokuk Limestone, Warsaw, Illinois.

Genus ATHYRIS, McCoy.=SPIRIGERA, D'Orbigny.

ATHYRIS PARVIROSTRA.—Shell of medium size, subquadrate, moderately gibbous, length and breadth about equal, sometimes a little wider than long; 1860.]

greatest convexity near the middle of the valves, which are equally convex. Lateral margins rather narrowly rounded in the middle, thence converging with a slightly convex outline to the middle of the front, which is faintly subtruncate; from the most prominent part of the lateral margins, they converge to the beaks at an angle of about 97° . Both valves without a distinct mesial fold or sinus, though they are each sometimes marked by a narrow, scarcely perceptible flattening along the middle. Beak of ventral valve small, slender, and closely incurved upon that of the opposite valve, which is little less prominent. Surface marked by fine lines of growth, and small, rather obscure, concentric wrinkles. Internal spiral appendages, each making about twelve turns.

Breadth of a rather wide specimen 0.82 inch; length of do. 0.75 inch; convexity 0.52 inch.

Locality and position. Near Warsaw, Illinois. Keokuk Limestone of Lower Carboniferous series.

CONCHIFERA.

Genus PECTEN, Linnæus.

PECTEN TENUILINEATUS.—Shell rather small, broad ovate or subcircular, ventral border regularly rounded; posterior edge forming a broad, gentle curve along the middle and below, and intersecting the hinge above at an angle of about 110° ; anterior margin rounding regularly into the base from near the middle; hinge short, or about half the length of the valves, from the posterior to the anterior side. Right valve compressed; posterior ear nearly obsolete, flat, and not separated from the posterior margin by a sinus; anterior ear larger than the other, rounded at the extremity, and separated from the margin below by a deep, acutely angular sinus, from the extremity of which there is a sulcus extending obliquely upward in the direction of the umbo; beak rather compressed, located slightly behind the middle of the hinge, and not extending above its margin; surface apparently smooth, but showing under a good magnifier extremely fine, closely arranged concentric striae, which become much stronger on the anterior ear. (Left valve unknown.)

Height, from ventral margin to the hinge, 0.56 inch; breadth, from anterior to posterior side, 0.53 inch; length of hinge, 0.27 inch; convexity of right valve, 0.08 inch.

Locality and position. South line of Clinton county, Illinois. Upper Coal Measures; associated with *Modiola tenuiradiata* (= *Mytilus tenuiradiatus*, Swallow), and *Avicula ? longispina*, (= *Gervillia longispina*, Cox,) or a closely allied species.

Genus AVICULOPECTEN, McCoy.

AVICULOPECTEN OWENI.—Shell small, truncato-subcircular; base regularly rounded, posterior margin rounding from above the middle to the ventral border; anterior side rounded below; hinge equalling about two-thirds the diameter of the valves, from the posterior to the anterior side. Left valve moderately convex; anterior ear compressed, separated from the swell of the umbo by a rounded shallow depression, and defined by a shallow sinuosity of the anterior margin; having the form of an equilateral triangle, the anterior side of which is shorter than either of the others, very slightly rounded at the nearly rectangular extremity; posterior ear a little smaller than the other, compressed, very short, and not separated from the margin below by a distinct sinus, terminating in an obtuse angle of more than 100° ; umbo rather convex, located apparently a little behind the middle of the hinge, and scarcely extending beyond its margin; surface ornamented by numerous fine, closely arranged, radiating striae, which increase by implantation, and are crossed by a few irregular concentric marks of growth.

Diameter, from ventral margin to hinge, 0.48 inch; do. from the anterior

[Oct.

to the posterior margin, 0.50 inch; length of hinge, 0.35 inch; number of striae in 0.10 inch near the ventral margin, about 13.

Named in honor of Dr. D. D. Owen, the well known Western geologist.

Locality and position. Near Warsaw, Illinois. Keokuk Limestone of Lower Carboniferous series.

AVICULOPECTEN COXANUS.—Shell (left valve) rather small, very thin, compressed, broad subtrigonal ovate in outline, exclusive of the ears, slightly oblique; anterior and posterior sides rounding from below the ears to the base, which is regularly rounded; anterior ear of moderate size, triangular, and flattened, so as to be quite distinct from the umbonal slope, separated from the margin below by a broad, subangular sinus; slightly rounded at the extremity, and marked by about eight small radiating costæ, which are crossed by smaller and less regular marks of growth; posterior ear of nearly the same size as the other, flattened, but not very distinct from the umbonal slope, separated from the posterior margin by a regularly rounded, moderately deep sinus—acutely pointed at the extremity; hinge a little less than the breadth of the shell, and ranging nearly at right angles to its longer axis; beak compressed, scarcely projecting beyond the cardinal margin, and located very slightly in advance of the middle. Surface ornamented by small, simple, depressed, rigid costæ, which alternate in size, the smaller ones dying out at various distances between the margin and the umbo. (Right valve unknown.)

Length, or transverse diameter, 0.51 inch; height, from base to hinge, 0.53 inch; convexity (of left valve) 0.05 inch.

Dedicated to Edward T. Cox, Esq., of the Geological Survey of Kentucky.

Locality and position. Adams county, Illinois, dark bituminous Shale of Coal Measures.

AVICULOPECTEN BURLINGTONENSIS.—Shell of about medium size, very thin and fragile, suborbicular, slightly wider than long, broadly and regularly rounded on the ventral margin, more narrowly rounded near the middle on each side, thence sloping towards the beak at an angle of about 100°; hinge straight, between two-thirds and three-fourths as long as the transverse diameter of the valves, and ranging at right angles to their longitudinal axis. Left valve much compressed; anterior ear of moderate size, flat, subtriangular, the anterior side being shorter than either of the others, and rounding somewhat into the hinge,—defined by a broad rectangular sinus at its base; posterior ear flat, separated from the border below by a wide, rather deep subangular sinus, and terminating in an angle of about 45°; beak compressed, and located a little in advance of the middle of the hinge. Surface ornamented by eighty to ninety small, nearly equal, radiating costæ, which increase by implantation, and about equal the breadth of the depressions between. Costæ crossed by numerous very regular, undulating, and distinctly imbricating, concentric laminae of growth, which become closely arranged, and sharply elevated on the ears, where the radiating ribs are not developed. (Right valve unknown.)

Diameter, from the ventral border to the hinge, about 2.18 inches; do. from the anterior to the posterior side, 2.30 inches; convexity, near 0.30 inch; length of hinge, 1.63 inch; number of radiating costæ in 0.40 inch near the ventral margin, 10 to 12; number of concentric imbricating lamellæ in same space, about 18.

Locality and position. Burlington, Iowa. Burlington Division of the Lower Carboniferous series.

AVICULOPECTEN KONINCKII.—Shell large, subcircular, rather compressed, wider parallel to the hinge than the diameter at right angles to the same; broadly rounded on the pallial margin, and more narrowly rounded on each side a little below the middle. Hinge straight, apparently rather less than the greatest breadth of the valves below, and ranging very nearly at right 1860.]

angles to the vertical axis of the shell. Left ? valve compressed ; anterior ear flat, having the form of an inequilateral triangle, the anterior side of which is much shorter than either of the others ;—rather acutely angular at the extremity, and separated from the margin below by a nearly rectangular notch ; posterior ear apparently nearly of the same size as the other, compressed, and separated from the margin below by a rounded, moderately deep sinus : beak, small, compressed, and not extending above the hinge ; surface marked by rather small, obscure, depressed, radiating costæ, which are crossed by a few faint marks of growth.

Greatest breadth parallel to the hinge, a little below the middle, 3.39 inches ; diameter at right angles to the same, 3 inches ; length of hinge 3 inches.

A fragment, probably of the other valve of the same species, embedded in the same mass with that described above, has much more prominent and more angular costæ, crossed by smaller, closely arranged concentric lines, so as to give them a slightly crenulated appearance.

Named in honor of Prof. L. De Koninck, the distinguished palæontologist of Liege.

Locality and position. Alpine, Iowa. Lower Coal Measures.

AVICULOPECTEN INTERLINEATUS.—Shell rather small, compressed, broad ovate or subcircular, exclusive of the ears ; length and breadth nearly equal ; hinge straight, scarcely equalling the greatest breadth, ranging at right angles to the axis of the shell. Left valve with base regularly rounded ; posterior and anterior margins prominent near the middle, and rounding to the pallial margin, rather distinctly sinuous under the ears ; anterior ear triangular, flattened, so as to be quite distinct from the umbonal slope ; posterior ear somewhat larger than the other, compressed, triangular, the hinge side being longer than either of the others, rather acutely angular at the extremity ; beak a little nearer the anterior than the posterior side, not oblique ; surface ornamented by about fifteen regular, very prominent, slender, concentric costæ, separated by spaces some four or five times their own breadth ; spaces between the costæ occupied by numerous very fine, regular, closely arranged concentric striæ, which are crossed by very obscure traces of radiating ribs.

Diameter, from hinge to pallial border, 0.60 inch ; breadth, 0.62 inch ; convexity, 0.12 inch. (Right valve unknown.)

Locality and position. Lasalle, Illinois. Upper Coal Measures.

AVICULOPECTEN AMPLUS.—Shell large, distinctly inequivalve ; height and breadth about equal ; ventral margin regularly rounded ; posterior and anterior sides rounding to the base ; hinge line straight, less than the breadth of the valves. Left valve convex, particularly in the umbonal region ; posterior ear very short, obtusely subangular, and sometimes defined by an obscure sinus in the margin below ; anterior ear separated from the swell of the umbo by a more or less deeply rounded sulcus, (form unknown ;) beak rather gibbous, incurved, slightly oblique, and extending a little above the hinge. Surface ornamented by distinct, narrow, rather elevated, obscurely subnodose, radiating plications, separated by spaces five to seven times their breadth, and crossed by fine, indistinct lines and wrinkles of growth ; between the costæ there are also fine radiating striæ, one or two of which are often larger than the others. Right valve flat, or a little concave ; posterior ear short, nearly rectangular, the margin below it being faintly sinuous ; anterior ear also short, and separated from the margin below by a very deep, narrow, somewhat arched and angular sinus ; beak entirely obsolete ; surface smooth, or only having indistinct marks of growth, and a few faint radiating lines.

The hinge area of both valves is rather broad, and marked parallel to its margin by fine grooves. In the left valve it is slightly inclined towards the right side, over that of the other valve, in which it is also inclined backwards

[Oct.

in the same direction. An internal cast of one of the left valves shows a large, circular, muscular impression, located a little behind the middle of the valve.

Height, 3.67 inches; breadth, 3.69 inches; convexity of left valve, 0.70 inch; number of radiating costæ in 0.88 inch, at a distance of 2 inches from the beak, five.

In the shortness of its ears, the deep sinus in the anterior edge of its right valve, and its surface markings, this species seems to bear close relations to the typical forms of the genus *Monotis*, but it wants the cartilage-pit under the beak, said to be characteristic of that genus, while its geological position is far below the range of any of the known species of *Monotis*.

Locality and position. Monroe county, Illinois. Keokuk Limestone of Lower Carboniferous series.

AVICULOPECTEN PELLUCIDUS.—Shell small, extremely thin, broad subovate or subcircular, exclusive of the ears, slightly oblique; hinge margin straight, less than the greatest diameter of the valves, from the front to the posterior side; ventral margin nearly regularly rounded; anterior edge rounded near the middle, and passing by a slightly oblique curve into the ventral border; posterior margin most prominent below the middle. Left valve much compressed; anterior ear rather small, triangular, flattened and distinct from the umbonal slope, separated from the anterior edge by a broad, subangular sinus; posterior ear about the same size as the other, flat, and terminating in a rather acute angle, separated from the posterior margin by a broad, very shallow, rounded sinus; beak compressed, or but slightly convex, and located near the middle of the hinge. Surface ornamented by very fine, radiating, thread-like striæ, which increase by implantation, and are generally rather smaller than the depressions between; crossing these are equally fine, regular, less distinct, concentric lines. (Right valve unknown.)

Diameter from ventral margin to the hinge, 0.36 inch; breadth from the posterior to the anterior side, 0.35 inch; length of hinge, 0.23 inch; number of radiating striæ in 0.10 inch, at the ventral margin, about 12.

Locality and position. Adams county, Illinois. Coal Measures, in dark bituminous shale.

Genus *AVICULA*, Klein.

AVICULA OBLONGA.—Shell small, nearly semicircular, slightly oblique; hinge straight, and longer than any other part of the valves. Left valve moderately convex; anterior wing triangular, compressed, separated by a broad, undefined sulcus, from the swell of the umbo, very slight sinuous on its margin, which intersects the hinge border nearly at right angles; posterior wing larger than the other, compressed, broadly sinuous in outline, and terminating in an acute angle; beak small, pointed, slightly oblique, incurved, and scarcely passing beyond the hinge line; surface ornamented by about twenty-six simple, sharply elevated, linear, radiating costæ, separated on the middle of the valve, by spaces from three to five times their own breadth, and crossed by similar regularly disposed concentric lines, so as to produce a neat, coarsely cancellated style of ornament. (Right valve unknown.)

Diameter from ventral margin to hinge, 0.39 inch; breadth from the posterior to the anterior edge, 0.60 inch; length of hinge, 0.56 inch; convexity of left valve, 0.07 inch.

Locality and position. Warsaw, Illinois. Warsaw Limestone of Lower Carboniferous series.

Genus *MYALINA*, Koninck.

MYALINA ANGULATA.—Shell rather large, obliquely subovate, longer than high, nearly or quite equivalve, very convex near the front, cuneate posteriorly and above; hinge margin rather long, straight, and carinated; posterior 1860.]

margin convex along the middle, and rather distinctly concave in outline near the hinge above; base very abruptly rounded, or subangular near the front; anterior side oblique, nearly straight, broadly and distinctly flattened at right angles to the plane of the valves; umbonal slopes extremely prominent, and distinctly angular, ranging at an angle of 58° with the hinge line; beaks terminal, elevated a little above the hinge, incurved, acutely angular, and strongly compressed at right angles to the hinge. Surface of casts retaining rather obscure marks of growth.

Height, measuring at right angles to the hinge, 3.32 inches; length parallel to the hinge, 3 inches; length, measuring from the beaks obliquely, to the most prominent part of the base, 3.35 inches; convexity of the valves, 1.30 inch.

Locality and position. Chester, Illinois. Chester Limestone of the Lower Carboniferous series.

MYALINA CONCENTRICA.—Shell small, thin, rather compressed, subquadrate, a little higher than long, not very oblique; hinge straight, slightly less than the length of the valves below; anterior side a little arcuate, ranging at an angle of about 85° with the hinge, and curving rather abruptly inward from the umbonal slopes; posterior side compressed, straight, or very slightly sinuous in outline above, and intersecting the hinge at about the same angle as the anterior border; base regularly rounded; beaks pointed, incurved, and scarcely rising above the hinge; umbonal slopes rather compressed; surface marked by slender, somewhat obscure, regularly arranged lines, separated by smooth spaces some eight to ten times their own breadth.

Height, 0.67 inch; length, 0.59 inch; convexity of a left valve, about 0.22 inch.

Locality and position. Spargen Hill, Indiana; from an Oolitic bed containing great numbers of small fossils, described by Prof. Hall, and placed by him on a parallel with the Warsaw Limestone of the Lower Carboniferous series.

MYALINA RECURVIROSTRA.—Shell of medium size, rather thick, obliquely trigonal, ovate, inequivalve, (the left valve being more convex, and thicker than the other,) very gibbous, and narrowly rounded along the umbonal slopes; hinge nearly or quite straight, more than equalling the height in young specimens, but proportionally a little shorter in mature shells; posterior margin a little convex, ranging nearly at right angles to the hinge above, and rounding gradually forward below; base narrowly rounded; anterior margin oblique, or ranging at an angle of about 55° with the hinge, slightly convex in outline, and separated by a shallow, oblique depression, from the umbonal ridge above, and broadly sinuous along the middle; beaks small, pointed, terminal, that of the left valve being spirally incurved, so as to make nearly one entire turn at the extreme point, which is directed obliquely forward; surface marked by distinct lines, and imbricating laminae of growth, which are quite prominent on the anterior side, and near the cardinal margin of the left valve, but more obscure on all parts of the other.

The ligament area is comparatively narrow, and marked by longitudinal furrows; immediately under the beak the anterior margin is thickened, so as to present a broader area than the hinge, from which it is separated, in the left valve, by an oblique groove, and in the other by a prominent corresponding ridge. The posterior muscular impression is large, narrow, ovate, acutely angular above, rounded below, and ranging nearly parallel to the posterior border. The pallial line is well defined; anterior muscular scar small, oval, and located near the beaks.

Length, measuring forward and upward from the postero-basal extremity to the beaks, 2.10 inches; height, 1.67 inch; convexity, about 1 inch; length of posterior muscular scar, 0.75 inch; breadth of do. at lower extremity, 0.28 inch.

Locality and position. Near Springfield, Illinois. Coal Measures.

[Oct.

Genus SOLEMYA, Lamarek.

SOLEMYA RADIATA.—Shell very thin, narrow, or elongate subelliptical, moderately convex; ventral margin straight, or slightly concave along the middle; anterior (longer) side narrowly rounded at the extremity, the most prominent part being a little above the middle; posterior (shorter) side rather narrowly rounded; dorsal border nearly parallel to the base in front of the beaks, and declining more rapidly, with a slightly concave outline behind them. Surface with obscure concentric marks of growth, crossed by flat, nearly obsolete, radiating plications, which are sometimes separated near the middle of the valves, by spaces greater than their own breadth; on the anterior side, where they are very oblique, and more closely arranged, they sometimes become irregular, and scarcely distinguishable from finer irregular radiating striæ; not well defined on other parts of the shell.

Length 1·10 inch; height 0·50 inch; convexity 0·36 inch.

Locality and position. Grayville, Illinois. Coal measures.

Genus LEDA, Schumaker.

LEDA (YOLDIA ?) LEVISTRIATA.—Shell rather under medium size, narrow subovate, moderately convex in the central and anterior regions, more compressed posteriorly; base forming a broad semioval curve, the most prominent part of which is a little in advance of the middle; anterior side rounded; posterior side somewhat contracted, or narrower than the other, and more abruptly rounded at the extremity, which is a little gaping; dorsal margin declining gently, and rather concave behind the beaks, nearly horizontal and slightly convex in front of them; beaks depressed and located a little behind the middle; surface apparently smooth, but when examined by the aid of a good lens it is seen to be marked by extremely fine, obscure, regularly arranged concentric striæ.

Length 0·57 inch; height 0·20 inch; convexity 0·14 inch.

Locality and position. Waterloo, Monroe County, Illinois. Upper part of St. Louis Limestone, of the Lower Carboniferous series, where it was found associated with some of the small fossils described by Prof. Hall, from Spurgeon Hill, Indiana.

Genus SCHIZODUS, King.

SCHIZODUS CHESTERENSIS.—Shell rather large, transversely ovate, convex in the anterior and umbonal regions, and cuneate posteriorly. Anterior side regularly rounded; base forming a broad, irregular, semioval curve, being usually slightly more prominent a little behind the middle than elsewhere, thence nearly straight and ascending gradually to the posterior extremity; posterior side contracted, considerably longer than the other, and abruptly rounded or subangular at the termination, the most salient part being rather above the middle; dorsal margin nearly straight and declining gradually behind the beaks, from which it rounds regularly into the anterior margin in front. Beaks gibbous, rather elevated, incurved, and located less than one-third the length of the shell from the buccal margin. Muscular impressions shallow; those in front ovate, placed near the margin, and a little above the middle; those on the posterior side oval, and located near the dorsal edge, about half-way between the beaks and the anal extremity. Surface marked only by fine lines of growth.

Length (of internal) 1·38 inches; height 1 inch; convexity 0·78 inch.

Resembles closely the Permian species *Axinus obscurus*, Sowerby, but is less elevated in proportion to length, and has rather more oblique umbones; while the most salient part of its posterior margin is a little above, instead of below the middle. It is usually found in the condition of internal casts.

Locality and position. Chester, Illinois. Upper part of Chester Limestone, of the Lower Carboniferous series.

1860.]

Genus *CARDIOMORPHA*, Koninck.

CARDIOMORPHA RADIATA.—Shell subcircular, gibbous in the central and umbonal regions, base more narrowly rounded than the front or anal margin; cardinal border a little arched; beaks gibbous, abruptly pointed, incurved and showing a tendency to curve forward at the immediate points, depressed or rising but little above the hinge margin; surface ornamented by numerous fine, regular, radiating, rather rounded striae, about equalling the depressions between. (Hinge and interior unknown.)

Allied to *C. ovata* of Hall, (Rept. Survey Iowa, pl. 7, fig. 10), from near the same horizon, but more rounded in outline, and has much less elevated and less curved beaks. Both these species differ from the typical forms of *Cardiomorpha*, Koninck, in having radiating striae, and may prove to be generically distinct when specimens showing the hinge and interior are obtained.

Length 0.95 inch; height 1 inch; breadth or convexity 0.77 inch.

Locality and position. Rockford, Indiana. From beds containing Carboniferous species of *Goniatites*, but generally supposed to be of Upper Devonian age.

*GASTEROPODA.*Genus *BELLEROPHON*, Montfort.

BELLEROPHON CRASSUS.—Shell large, very thick, subglobose, or a little longer than wide; volutions expanding somewhat rapidly, rounded over the dorsum and sides; umbilical region excavated, but not perforate; mesial band narrow, rather prominent, and margined on each side by a raised line; aperture transverse, reniform, or sublunate; lip strongly thickened near the umbilical excavations on each side, but not covering them, thinner and but slightly prominent on either side of the narrow sinus in its outer margin, and spreading in the form of a moderately thick, smooth, callus, over the inner whorls within the aperture, and between the callosities on each side; surface marked by rather distinct irregular wrinkles, and lines of growth, the former of which are strongest on each side near the lip.

Greatest length 2.20 inches; breadth at the aperture 2 inches; breadth of the mesial band near the aperture 0.12 inch.

Locality and position. Pittsburg, St. Claire County, Illinois. Lower part of the Coal measures.

Genus *PLEUROTOMARIA*, Defrance.

PLEUROTOMARIA SUBCONSTRICTA.—Shell small, conical subovate, longer than wide; spire moderately elevated, rather pointed at the apex. Volutions five and a-half to six, obliquely flattened or concave above, excepting near the suture, where there is a subangular prominence occupied by a series of small nodes or granules; those of the spire having a second angle a little below the middle. Body whorl forming rather more than half the entire length, biangular around the middle, the lower angle being less prominent and more obtuse than the other, and not exposed on the spire; vertically flattened or a little concave on the outer side, and convex below. Suture linear, but occupying a rather distinct rounded constriction or depression. Aperture broad subovate, approaching a rhombic subquadrate outline; columella not distinctly perforate. Surface ornamented by about fifteen revolving lines, some ten or twelve of which occupy the under side of the body whorl, where they are larger than on any other part of the shell; crossing these there are very fine transverse striae, which are closely arranged on the upper slope of the whorls, particularly in crossing the spiral band, but on reaching the lower angle of the body whorl, they become stronger, so as to give it a crenulated appearance. Spiral band narrow, flat and located just above the middle angle of the body volution.

[Oct.

Length 0.33 inch; breadth 0.24 inch; apical angle nearly regular, divergence 60°.

Locality and position. Hodges Creek, Macoupen County, Illinois. Coal measures.

PLEUROTOMARIA GRANULOSTRIATA.—Shell very small, conical subovate, or subtrochiform; spire moderately elevated; volutions five, increasing rather gradually in size, compressed convex, last one prominently rounded or subangular around the middle; suture well defined; aperture subcircular; spiral band not very distinctly defined, located near the middle of the body whorl and passing around just above the suture on the outer turns; columella imperforate. Surface ornamented by about twelve or thirteen comparatively distinct revolving lines, eight of which occupy that portion of the body whorl below the band, where they are a little smaller and more closely arranged than above.

On the upper slope of the whorls above the band, the three or four revolving lines occupying that part of the shell are crossed obliquely by distinct transverse lines, which are so much stronger on the revolving striæ than between them, that they present the appearance of small nodes or granules, at the points of crossing. One of the revolving lines, which is larger than the others, passes around on the middle of the revolving band, and is neatly and regularly crenulated by the crossing of the transverse lines.

Length 0.17 inch; breadth 0.15 inch; apical angle regular, divergence 60°.

Locality and position. Hodges Creek, Macoupen County, Illinois. Coal measures.

PLEUROTOMARIA TENUICINCTA.—Shell small, conical ovate, spire moderately elevated; volutions seven, obliquely flattened or a little concave above, convex and more or less distinctly angular around the middle, last one tumid below; suture distinct; spiral band very narrow, concave, located a little above the middle of the body whorl, and passing around rather below the middle of the others; aperture subcircular; umbilical region indented, but apparently not distinctly perforate. Surface ornamented by about eighteen to twenty rather distinct revolving lines, only two or three of which occupy the flattened or concave upper slope above the band, where they are less prominent than the others; while the two forming the margins of the band are more salient than any of those below; fine, regularly arranged striæ, which are much more distinct on the slope above, than below the band, mark the whorls transversely.

Length 0.24; breadth 0.20 inch; apical angle a little convex, divergence 60°.

Locality and position. Springfield, Illinois. Upper Coal measures.

PLEUROTOMARIA PRATTENI.—Shell very small, conical ovate, the length being greater than the breadth; spire rather elevated, but not acute at the apex; volutions six to six and a-half, slightly convex, increasing gradually in size, those of the spire more or less distinctly angular around the middle, last one sometimes slightly flattened near the middle just below the angle, and convex on the under side; suture well defined. Spiral band of moderate breadth, not very distinctly defined, sometimes slightly concave, occupying the more or less compressed middle portion of the last whorl, and passing around so as to bring its lower margin a little above the suture on the other turns. Aperture subcircular; columella arcuate, a little flattened below, and imperforate; outer lip thin; sinus narrow and deep. Surface marked by about eighteen to twenty very small, obscure revolving striæ, some twelve or thirteen of which occupy the body whorl below the band, where they are a little larger than those above the angle, and more regularly arranged; lines of growth very fine and obscure.

Named in honor of Mr. Henry Pratten, deceased, formerly of the Geological Survey of Illinois.

1860.]

Length 0.24 inch; breadth 0.18 inch; apical angle convex, divergence about 37°.

Locality and position. Hodges Creek, Macoupen County, Illinois. Coal Measures. Abundant.

PLEUROTOMARIA SUBSINUATA.—Shell, conical ovate; spire elevated; volutions six, convex, last one, in mature shells, sometimes obliquely flattened a little above, just below the suture, thence rounded below; suture linear, but occupying a more or less deeply rounded depression; spiral band not well defined, angular, located above the middle of the body whorl, at the lower edge of the slight flattening of its upper side, and passing around the middle of the upper turns; sinus of the lip, judging from the curve of the lines of growth in crossing the band, shallow, and not very clearly defined; aperture subcircular; columella indented in the umbilical region, but not distinctly perforate. Surface ornamented by about fourteen to eighteen distinct revolving lines, three of which, on the middle of the last turn, are larger than those above, while those below gradually diminish in size toward the umbilical pit; only two or three of the smaller lines usually occupy the slightly depressed upper part of the whorls, where they are crossed by a series of regularly arranged, transverse costæ or wrinkles; lines of growth obscure.

Length 0.40 inch; breadth 0.31 inch; apical angle convex, divergence 55°.

Locality and position. Hodges Creek, Macoupen County, Illinois. Coal Measures.

PLEUROTOMARIA CHESTERENSIS.—Shell of medium size, turbinate; spire moderately elevated; volutions about six, increasing rather gradually in size, convex, distinctly carinated around the middle, and flattened, or a little concave above and below the carina, the flattened space above being oblique, and that below vertical; last whorl provided with a second carina below the other, and a little convex on the under side; suture linear; umbilicus small, or nearly closed; surface marked by numerous fine, regular, thread-like revolving lines, crossed by similar striæ, which, in traversing the spiral band,—which occupies the space on the middle of the body whorl between the two carinæ,—make a gentle backward curve, parallel to the border of the rather shallow sinus of the outer lip; aperture subcircular, approaching a subquadrate outline.

Length 0.75 inch; breadth 0.72 inch; apical angle regular, divergence about 60°; breadth of spiral band 0.14 inch.

Similar in form and general appearance to *P. tabulata*, Conrad, but differs in having a small umbilicus, while the axis of that shell is not perforate. It also differs in having a much broader spiral band, which occupies the space between the two carinæ, instead of coinciding with the upper angle. Again the upper carina of the shell under consideration is never crenulated, as in Conrad's species.

Locality and position. Chester, Illinois. Chester Limestone of the Lower Carboniferous series.

PLEUROTOMARIA SUBSCALARIS.—Shell large, rather thick, conical ovate; spire moderately elevated; volutions six, those near the summit of the spire flattened, the others convex, and provided with a distinct, sharp carina, which occupies a position a little above the middle of the body whorl, passes around near the middle of the second, becomes lower on the third, and sinks below the suture on the others. Below this angle there is on the body volution, a second less distinct subangular prominence, with a broad, vertical, nearly flattened, or slightly concave space between the two. Under side of last turn a little convex, and the umbilical region somewhat indented, but not perforate; suture well defined. Spiral band narrow, and occupying the principal angle of the whorls.

The surface of our specimen is somewhat eroded, but it retains traces of about twenty rather strong revolving lines, eight or nine of which occupy the upper side of the whorls, above the carina, some three or four the flattened

[Oct.

outer side of the body whorl, and the remainder the under side. On the upper sloping surface of the whorls there are also regularly arranged, oblique transverse striæ, which, in well-preserved specimens, are probably continued upon the outer and under sides of the last turn.

Agrees with *P. tabulata*, Conrad, in size and general appearance, but differs in having the upper whorls of the spire more depressed, and without any angle visible above the suture. The principal angle on its lower whorls also appears to be destitute of the crenulation, so distinct on that of *P. tabulata*.

Length 1·67 inch; breadth 1·52 inch; apical angle convex, divergence 70°.

Locality and position. Macoupen County, Illinois. Lower Coal Measures.

PLEUROTOMARIA SPECIOSA.—Shell attaining a medium size; spire moderately elevated; volutions seven to seven and a-half, subangular just below the suture, thence obliquely flattened to a much more distinct revolving angle a little below the middle of the upper turns, and about the middle of the body whorl. Below this second angle the outer side of the last turn is vertically flattened or a little concave, so as to produce a third obtuse revolving prominence below the middle, beneath which the under side of the whorl is convex. Suture well defined. Spiral band narrow, very prominent, angular and regularly crenulated by cross lines, occupying and partly forming the middle angle of the body whorl, which passes around on the upper whorls a little more than one-third of their breadth above the suture. Aperture subcircular, approaching subpentagonal; umbilicus small. Surface ornamented by eighteen to twenty-two thread-like revolving lines, about twelve of which occupy the under side of the body whorl, four to seven the upper slope, and two or three the outer flattened space. Crossing all these there are numerous extremely fine, very regular, closely arranged transverse lines, about every fourth or fifth one of which is considerably enlarged near the suture; and they all curve obliquely backwards in approaching the spiral band.

Length about 0·55 inch; breadth 0·51 inch; apical angle regular, divergence 32°; breadth of spiral band not more than about 0·03 inch.

Locality and position. Hodges Creek, Macoupen County, Illinois. Coal Measures.

PLEUROTOMARIA TURBINIFORMIS.—Shell rather large, trochiform, height and breadth nearly equal; spire conical, moderately elevated; volutions about five and a half to six, flat, last one distinctly angular around the outer side, and flattened or slightly convex below; umbilical region somewhat excavated, but not perforate; spiral band extremely narrow, grooved, occupying the angle around the outer side of the body whorl, and passing around scarcely above the suture on the other volutions, margined above and below by a sharply elevated line; suture linear, but well defined, having a somewhat banded appearance, in consequence of the development of a rather distinct revolving line at the upper margin of each whorl; aperture apparently rhombic subquadrate. Surface ornamented by about twenty obscure, closely arranged, revolving striæ, crossed by stronger, very regular transverse lines, which are most distinct on the upper part of the whorls, and pass with a gentle curve obliquely backwards and outwards to the spiral band. Below the angle the body whorl is nearly smooth, or only marked by very obscure lines of growth, and faint traces of revolving striæ.

Length about 0·93 inch; breadth nearly 0·97 inch; apical angle regular, divergence 64°.

Locality and position. Lasalle, Illinois. Upper Coal Measures.

PLEUROTOMARIA SCITULA.—Shell small, trochiform, length and breadth nearly equal; spire depressed conical; volutions six, a little convex, last one prominent and narrowly rounded or subangular on the periphery, slightly convex below; suture somewhat channelled; aperture subcircular, approaching a subquadrate form; umbilical region impressed, but not distinctly perforate; spiral band

rather narrow, concave, and located above the narrowly rounded periphery of the body whorl, passing around rather below the middle of the other volutions. Surface ornamented by from about seventeen to twenty-two revolving lines, only three or four of which occupy that part of the body whorl above the band, where they are larger and more widely separated than below; distinct, but much smaller, regularly arranged, thread-like lines mark the volutions transversely.

Length and breadth each about 0.22 inch; apical angle convex, divergence 79°.

Locality and position. Hodges Creek, Macoupen County, Illinois. Coal Measures.

PLEUROTOMARIA SHUMARDI.—Shell trochiform, of medium size, very thin; spire moderately elevated, conical, pointed at the apex. Volutions about six, increasing rather rapidly in size, obliquely flattened above; those of the spire being somewhat angular near the lower side; last one very prominent, and angular around the middle, the immediate edge of the angle being terminated by the narrow spiral band, convex below. Band slightly concave, and margined above and below by a small line or indistinct angle, the lower one of which scarcely rises above the suture on the upper whorls. Suture well defined. Umbilicus small, or nearly closed. Aperture rhombic subquadrangular, wider than high. Surface ornamented by numerous transverse lines, which are very regular and closely arranged on the upper whorls, but become stronger, more distinct, and less regular on the last turn. In crossing the upper flattened sloping sides of the whorls, these lines arch a little forward, and pass very obliquely backwards from the suture to the band; on the under side of the body whorl they are small, nearly obsolete, and crossed by obscure traces of fine revolving striae.

Named in honor of Dr. B. F. Shumard, State Geologist of Texas.

Length 0.70 inch; breadth 0.73 inch: apical angle rather distinctly concave, divergence 70°.

Locality and position. Warsaw and Keokuk, Illinois. Base Geode bed, Warsaw Limestone, of Lower Carboniferous series.

Genus **STRAPAROLLUS**, Montfort?=**EUOMPHALUS**, Sowerby.

EUOMPHALUS PLANODORSATUS.—Shell of medium size, subdiscoidal, spire nearly flat, or but slightly elevated above the body whorl. Volutions about five, increasing gradually in size from within, flat above, and provided with a moderately distinct revolving angle about two-thirds of the distance across from the inside; from this angle the outer whorl is rounded over the periphery to about the middle of the under side, where there is another angle, from which it rounds into the umbilicus; suture well defined. Umbilicus large, deep and showing about one-half of each inner whorl; aperture subcircular. (Surface unknown.) Height about 0.30 inch; breadth 1 inch.

Allied to *E. pentangulatus*, Sowerby, but differs in having the angle on the upper side of the whorls located nearer the outer margin, and the periphery or outer side of its volutions more broadly rounded.

Locality and position. Thompson's quarry, Randolph County, Illinois. Chester Limestone, of Lower Carboniferous series.

EUOMPHALUS UMBILICATUS.—Shell of medium size, depressed subtrochiform; spire rather elevated for a species of this genus. Volutions five to five and a-half, convex, increasing gradually in size, nearly horizontally flattened on the upper side, about half-way across from the suture, where there is a rather distinct revolving angle, below this angle the upper oblique outer slope is slightly flattened to near the middle of the outer side, which, in the last whorl, is narrowly rounded; under side of body volution rounded to a moderately distinct angle near the middle, thence rounding into the umbilicus. Suture well defined. Umbilicus large, or nearly twice as wide as the diameter

[Oct.

of the last turn, very deep and permitting the inner side of all the volutions to be seen to the summit of the spire. Surface marked by fine, rather obscure lines of growth.

Height 0.88 inch; breadth 1.08 inch; breadth of umbilicus, measuring from its marginal angle on the middle of the under side of last whorl, 0.68 inch; apical angle convex, divergence about 100° .

Locality and position. St. Clair County, Illinois. Lower Coal Measures.

Genus NATICOPSIS, McCoy.

NATICOPSIS NODOSUS.—Shell obliquely subrhomboidal, rather thick; spire depressed; volutions four and a-half, convex, increasing rapidly in size, last one large, gibbous, oblique, and composing three-fourths of the entire length, round on the outer side, and having shallow revolving depressions near the suture above; suture moderately distinct; aperture subovate; lip sharp; columella distinctly flattened, somewhat callous, not perforated. Surface ornamented by numerous, nearly round, distinct nodes, which are arranged in oblique rows, parallel to the lines of growth near the aperture of the last turn, but become more crowded, and show a tendency to assume a quincunx arrangement on other parts of the shell; lines of growth fine, rather regular and scarcely deflected from their course by the presence of the nodes.

Length, measuring from the most extended part of the aperture below, obliquely to the apex of the spire, 1 inch; breadth 0.52 inch; apical angle convex, divergence about 96° .

Locality and position. St. Clair County, Illinois. Lower Coal Measures.

NATICOPSIS HOLLIDAYI.—Shell obliquely oblong-oval, thick and solid; spire depressed subconical, pointed at the immediate apex; volutions four to four and a-half, convex, excepting just below the suture, where there is a shallow revolving depression,—rapidly enlarging, the last one forming more than two-thirds the entire length; suture linear; aperture ovate around the margin, but contracted by the broad columella so as to be nearly semicircular within; columella distinctly flattened, broad, and marked along its sharp, nearly straight inner margin, by a well defined opercular impression. Surface ornamented by very fine regular lines of growth, and numerous small nodes, arranged in oblique rows; the larger nodes on the last half and upper part of the body whorl being more or less elongated in the direction of the lines of growth.

Length 1.15 inches; breadth 1.20 inches; apical angle nearly regular, divergence 107° . Named in honor of Mr. George H. Holliday, of Carinville, Macoupen County, Illinois, to whom we are indebted for the specimens described.

Locality and position. Hodges Creek, Macoupen County, Illinois. Coal Measures.

Genus PLATYOSTOMA, Conrad.

PLATYOSTOMA NANA.—Shell quite small, subglobose, wider than high; spire much depressed; volutions three, increasing very rapidly in size, last one large and ventricose; suture rather deeply defined; aperture large, broad obovate, straight on the inner side, equalling nearly seven-eighths of the entire length of the shell; surface marked by fine lines of growth, which become stronger, and very regular near the suture on the upper side of the whorls.

Length 0.19 inch; breadth 0.21 inch; length of aperture 0.15 inch, breadth of do. 0.11 inch; apical angle about 123° .

Differs from *P. Peoriensis*, McChesney, in being much smaller, and in having one whorl more, while its aperture is widest above instead of below.

Locality and position. Springfield, Illinois. Upper Coal measures.

PLATYOSTOMA? TUMIDA.—Shell rather large, thin, subpyriform, a little longer 1860.]

than wide; spire much depressed, or nearly flat; volutions four to four and a-half, convex, increasing rapidly in size, last one large, or forming about eight-ninths of the entire length, prominent and narrowly rounded above, contracted and extended below; suture well defined; aperture large, longer than wide, obovate, the inner side being nearly straight; columella not perforate; surface (of an exfoliated specimen) retaining traces of rather strong revolving lines.

Length 1.21 inches; breadth 1.17 inches; length of aperture 1.05 inches; breadth of do. 0.63 inch; apical angle regular, divergence 132°.

It is only provisionally we have placed this species in the genus *Platystoma*; the only specimen yet obtained being merely a cast retaining portions of the shell, but not giving a clear idea of its generic characters. It differs from the typical species of that genus in having revolving lines, and will probably be found to present other differences. When better specimens can be examined, we suspect it will prove to belong to an undescribed genus, though we have not the means of settling the question at present. If a new genus is established for its reception, a shell figured by Murchison, De Verneuil and Keyserling (Geol. Russia, pl. 23, fig. 14), as an undetermined species of *Ianthina*, (= *Scalites Verneuilii*, of D'Orbigny), should probably be placed in the same group.

Locality and position. Grayville, Illinois. Coal Measures.

Genus EUNEMA, Salter.

EUNEMA? SALTERI.—Shell elongate conical, turreted, acute at the apex. Volutions thirteen, slightly convex, increasing very gradually in size, ornamented by two small revolving carinæ a little below the suture, the lower one of which is larger than the other; last whorl having a third angle near the middle, which passes around just above the suture on the other volutions; below this third angle there is on the under side of the last turn a fourth nearly obsolete revolving prominence. Suture linear. Aperture ovate, a little oblique. Columella arcuate, not perforate. Lines of growth fine, rather obscure, and passing straight across the whorls.

Length 0.50 inch; breadth 0.17 inch. Length of aperture 0.17 inch; breadth 0.10 inch. Apical angle convex, divergence 20°.

This beautiful little shell differs from the typical species of the genus in which we have provisionally placed it, in having the lines of growth straight instead of sinuous. This character, and the revolving carinæ, would also separate it from *Loxonema*, to which we were at first inclined to refer it. On a hasty examination it might be referred to the genus *Murchisonia*, some species of which it nearly resembles in its general appearance; a careful examination, however, has satisfied us that its lines of growth do not make the slightest curve, so as to indicate the existence of a sinus in any part of the lip. We suspect it may belong to an undescribed genus; though, if it were from a more modern formation, we should scarcely hesitate to place it in the genus *Turritella*.

Named in honor of Mr. J. W. Salter, the distinguished Palæontologist of the British Geological Survey.

Locality and position. Springfield, Illinois. Upper Coal Measures.

Genus LOXONEMA, Phillips.

We doubt the propriety of referring such forms as are here described, to the recent genus *Turbonilla*, (= *Chemnitzia*, D'Orbigny,) since they are generally not only much larger shells, but differ in not having, so far as we have been able to see, the apex of the spire reversed, as in the species upon which the genus *Turbonilla* was founded. We therefore agree with those who prefer to retain Phillips' name, *Loxonema*, for these older fossil species.

LOXONEMA SCITULA.—Shell small, elongate, conical; spire elevated and regularly tapering; volutions eight to eight and a half, very slightly convex, increasing gradually in size, last one rounded and not produced below; suture

[Oct.

moderately well defined; aperture obliquely ovate, acutely angular above. Surface ornamented by distinct, regularly disposed, straight vertical folds or costæ, about fourteen or fifteen of which occupy each turn; folds equalling the depressions between, and on the last turn becoming suddenly obsolete below the middle; no lines of growth visible.

Length 0.23 inch; breadth, 0.10 inch; length of aperture, 0.07 inch; breadth of do., 0.04 inch. Apical angle regular, divergence 25°.

Locality and position. Springfield, Illinois. Upper Coal Measures.

LOXONEMA RUGOSA.—Shell small, elongate, conical; volutions seven and a half to eight, very slightly convex, increasing gradually in size, last one abruptly rounded in the middle, not extended below; suture rather slightly impressed; aperture ovate. Surface of each whorl ornamented by about eighteen to nineteen straight, distinct, vertical folds or costæ, which equal the depressions between, and are disposed so as to range in regular lines from the last whorl to the summit of the spire; those on the body whorl becoming abruptly obsolete below the middle. No lines of growth visible.

Length, 0.44 inch; breadth 0.18 inch; length of aperture 0.12 inch; breadth of do., 0.08 inch. Apical angle convex above, divergence 25°.

Near the last, but differs in having the spire less attenuate above, and in having more costæ to each turn. The costæ also differ in being ranged in right lines, all the way up the spire, while those of the adjacent whorls, in the last, alternate. This latter character gives quite a peculiar aspect to this species.

Locality and position. Same as last.

LOXONEMA CERITHIFORMIS.—Shell rather under medium size, elongate, conical; spire elevated, gradually tapering to an acute point. Volutions, eleven to twelve, convex, and increasing gradually in size; last one not much enlarged, somewhat prominently rounded below the middle. Suture well defined. Aperture oval, subrhombic, a little longer than wide, apparently provided with a small, rather oblique notch at the base of the columella; outer lip thin, broadly and deeply sinuous above and prominent below, so as to present a distinct inversely sigmoid outline; columella arcuate. Surface nearly smooth, but showing under a lens very fine, obscure lines of growth, which curve parallel to the margin of the lip; just below the suture these lines are gathered into a series of minute, short, regularly arranged wrinkles or crenulations, scarcely visible without the aid of a magnifier.

Length, 0.70 inch; breadth, 0.24 inch; length of aperture, 0.18 inch; breadth of do., 0.11 inch. Apical angle regular, divergence 24°.

Appears to agree very nearly with *Chemnitzia subconstricta* of Koninck, in form and surface markings; but differs, in the form of the aperture, and in having a small notch or sinus, with a slight projection of the lip, at the base of the columella.

Locality and position. Springfield, Illinois. Upper Coal Measures.

LOXONEMA INORNATA.—Shell small, conical subovate; spire moderately elevated, pointed at the apex; volutions seven, slightly convex, increasing rather gradually in size, last one somewhat prominently rounded in the middle, but not ventricose; suture rather shallow; aperture narrow subovate, acutely angular above, narrow, and provided with a small rounded sinus at the base of the columella below; columella arcuate; outer lip thin, and apparently but slightly sigmoid in outline; surface smooth, or only showing very obscure traces of fine lines of growth under a good lens.

Length, 0.38 inch; breadth, 0.18 inch; apical angle convex, divergence about 30°. Length of aperture, 0.16 inch; breadth of do., 0.09 inch.

Locality and position. Springfield, Illinois. Upper Coal Measures.

LOXONEMA NITIDULA.—Shell of medium size, subfusiform; spire elongated, 1860.]

conical, rather attenuate, and acutely pointed above; volutions eight to eight and a half, convex, and increasing rather gradually in size,—last one moderately large, somewhat contracted, and extended below; suture well defined, especially between the lower whorls; aperture narrow, subovate, a little oblique, acutely angular above, rather narrow, and terminating in a small rounded sinus at the base of the columella below, less than half the length of the entire shell; outer lip thin and sharp, with a scarcely sigmoidal margin; columella arcuate, and somewhat twisted below; surface smooth, but showing under a lens very fine, obscure lines of growth.

Length, 1.10 inch; breadth, 0.43 inch; apical angle regular, divergence 30°. Length of aperture, 0.47 inch; breadth, 0.20 inch.

Locality and position. Springfield, Illinois. Upper Coal Measures.

Genus EULIMA, Risso.

EULIMA? PERACUTA.—Shell comparatively large, elongate, conical; spire much elevated, attenuate, very acutely pointed at the apex, and sometimes subulate. Whorls about thirteen, nearly or quite flat, and increasing very gradually in size; last one forming a little more than one-third the entire length, slightly prominent around the middle, somewhat extended below; suture moderately distinct, particularly between the lower whorls. Aperture rather narrow, subovate, acutely angular above, and narrowly rounded below; outer lip thin and sharp; inner lip very slightly thickened, and a little reflexed below; columella arcuate or faintly sinuous. Surface polished, but showing under a good lens extremely fine, very obscure lines of growth.

Length, 1.67 inch; breadth, 0.54 inch; apical angle regular, divergence 22°. Length of aperture, 0.55 inch; breadth of do., 0.30 inch.

Locality and position. Jacksburg, St. Clair county, Illinois. Lower Coal Measures; also near Springfield, in Upper Coal Measures.

Genus MACROCHEILUS, Phillips.

Some confusion exists in regard to the limits of this genus, in consequence of the fact that Prof. Phillips did not define it clearly, and unfortunately included in it species belonging to several groups, without designating what particular species he regarded as the type of his genus. Nearly all subsequent authors, however, agree in referring to it those oval, or subglobose forms, with a thickened inner lip, and a more or less developed fold on the columella, such as *M. primigenius*, (= *Stylifer primigenius*, Conrad); while there are many other more elongated species referred sometimes to this genus, and sometimes to *Loxonema*, or to *Chemnitzia*.

It seems to us it would be better to regard as typical of this genus, only such species as have developed, in a greater or less degree, the fold and thickening of the inner lip,—nearly or quite all of which, so far as our observations go, are the shorter forms. The more slender, elongated species, with a comparatively small body whorl, somewhat extended below, and without any thickening of the inner lip, should, we think, be placed in a separate section, either of this genus, or of *Loxonema*, or constitute a distinct group from both.

MACROCHEILUS MEDIALIS.—Shell of medium size, rather thick, rhombic, oval; spire depressed conical, acutely pointed at the apex, forming near one-third of the entire length. Whorls six to six and a half, convex, increasing somewhat rapidly in size; last one large, but not ventricose, the widest part being near the middle; suture distinct. Aperture rather narrow, oval, acutely angular above, and narrowly rounded below; outer lip sharp, nearly straight, or but slightly prominent in the middle. Columella a little sinuous about half way up the aperture. Inner lip thickened to the top of the aperture, but not provided with a distinct fold or prominence below,—marked by small, regular, obscure transverse striae or wrinkles above the middle. Surface apparently smooth, but showing under a lens traces of fine, very obscure lines of growth.

[Oct.

Length, 1.12 inch; breadth, 0.68 inch; length of aperture, 0.72 inch; breadth of do., 0.39 inch. Apical angle convex, divergence 83°.

Locality and position. Springfield, Illinois. Upper Coal Measures.

MACROCHEILUS INTERCALARIS.—Shell of medium size, rhombic, oval; spire conical, forming more than one-third of the entire length, pointed at the extremity. Volutions six to seven, compressed convex, increasing rather rapidly in size; last one comparatively large, but not ventricose, widest near the middle, and compressed above. Aperture narrow, subovate, a little oblique, narrowly rounded, and faintly sinuous below, acutely angular above: outer lip thin, slightly prominent along the middle; columella having a small sinuosity in the middle, below which the lip is thickened, so as to form a moderately distinct oblique fold or obtuse prominence; inner lip not much thickened above. Surface smooth, but showing obscure traces of very fine lines of growth under a magnifier.

Length, 1.14 inch; breadth, 0.70 inch. Length of aperture, 0.70 inch; breadth of do., 0.32 inch. Apical angle convex, divergence 74°.

Locality and position. Same as last.

MACROCHEILUS PULCHELLUS.—Shell of medium size, rhombic, oval, or sub-fusiform; spire rather elevated, pointed at the apex, composing more than two-fifths the entire length. Whorls seven and a half, distinctly convex, increasing moderately in size, last one not ventricose; suture well defined. Aperture narrow, subovate, acutely angular above, and rather narrowly rounded below; outer lip sharp, and slightly sigmoid in outline; columella a little arcuate, or sinuous in the middle; inner lip moderately thickened, somewhat prominent, or showing a slight disposition to form an obtuse fold below. Surface polished, and having faint traces of fine lines of growth, which can only be seen by the aid of a magnifier.

Length, 1.30 inch; breadth, 0.79 inch; length of aperture, 0.75 inch; breadth of do., 0.34 inch. Apical angle convex, divergence 64°.

Locality and position. Same as last.

New Genus SOLENISCUS.*

The shell upon which we propose to found this genus, differs from the smooth species usually referred to *Loxonema* in having the body whorl contracted and extended below into a distinct straight canal, with a well defined oblique plait or fold rather low on the columella. In the last mentioned character, as well as in its smooth surface, it agrees more nearly with the genus *Macrocheilus*, but its fusiform outline, narrow aperture and distinct canal, are peculiarities which separate it clearly from that group, as usually understood. In its general appearance it resembles some species of *Fasciolaria*; but as it has only one, instead of two or three folds on the columella, and is entirely destitute of nodes, costæ, or revolving marks, while its outer lip is quite smooth within, there is little reason for supposing it to be really nearly related to that genus, which is unknown below the upper Cretaceous.

It is probable that when the aperture and columella of such species as *Macrocheilus limnaeiformis*, McCoy, and *Macrocheilus fusiformis*, Hall, (non *M. fusiformis* of Morris' Catalogue,) as well as of several of the smooth fusiform species referred by others to *Loxonema*, are better known, they will be found to possess the characters of this genus.

SOLENISCUS TYPICUS.—Shell fusiform; spire elevated, and acutely conical at the apex; volutions seven to seven and a-half, flat or but slightly convex, increasing rather gradually in size, last one comparatively large, slightly ventricose in the middle, and contracted into a distinct, straight canal below; suture moderately well defined; aperture very narrow, acutely angular above, and

*σοληνισκος: a little channel, or gutter.

tapering into the canal below; outer lip thin, sharp, and scarcely sigmoid in outline; inner lip none; columella straight, and provided with a single distinct rather sharply elevated, oblique plait or fold, a little below the middle of the aperture; surface smooth, or only showing under a good lens faint traces of very fine lines of growth,

Length 0.73 inch; breadth 0.30 inch; apical angle slightly concave, divergence 0.40°. Length of aperture and canal, 0.34 inch; breadth of former 0.11 inch.

Locality and position. Springfield, Illinois. Upper Coal Measures.

CEPHALOPODA.

Genus ORTHOCERAS, Breynius.

ORTHOCERAS EXPANSUM.—Shell having the form of a moderately compressed, rapidly tapering cone; section subcircular, near the smaller end, but more oval towards the larger. Septa concave, and separated near the smaller end by spaces between one-fourth and one-fifth their own greater diameter; the intervals increasing somewhat, but not near in proportion to the expansion of the shell above; siphuncle subcentral, small where it passes through the septa, but swelling out into a globular cavity between. Surface apparently smooth.

Length of an entirely septate specimen imperfect at both extremities, 4.29 inches; greater diameter at the smaller end 0.80 inch, smaller do. of same about 0.71 inch; greater diameter at larger end apparently not less than 3.20 inches.

This species is allied in form and general appearance to *O. dilatatum*, DeKoninck, (An. Fos. p. 515, pl. 45, fig. 8, a, b, c), but differs in presenting an oval instead of a circular section; its siphuncle is also much more nearly central than is represented in DeKoninck's figure 8, a and b, pl. 45, and differs in its peculiarity of swelling out into globular cavities between the septa. Our species seems likewise to differ in its surface markings, being nearly or quite smooth; this, however, may be due, at least to some extent, to the exfoliation of the outer layers of the shell.

Locality and position. McDonough County, Illinois; the specimen being found loose, its exact geological position is unknown, though it is doubtless a carboniferous species.

Genus CYRTOCERAS, Goldfuss.

CYRTOCERAS CURTUM.—Shell rather under medium size, slightly arched and rapidly expanding; section oval, the transverse diameter being greater than from the dorsal to the ventral side; lateral margins a little flattened; ventral and dorsal sides very broadly rounded. Surface ornamented by numerous small, regularly arranged annular striæ, or impressed lines, which arch a little forward in crossing the dorsum, where they are separated by spaces several times their own breadth, excepting near the smaller extremity of the shell. On the sides and ventrum, they become much more crowded, and more deeply impressed. Septa rather deeply concave; siphuncle small, and placed about half-way between the middle and the dorsal side.

Length of a specimen imperfect at the smaller end, 1.25 inches; greater diameter at the aperture about 1.24 inch, smaller do. 0.92 inch; greater diameter at the smaller extremity 0.54 inch, smaller do. 0.45 inch.

Locality and position. Graysville, Illinois. Coal Measures.

CYRTOCERAS? DILATATUM.—Shell broadly conical, very rapidly expanding, thick, especially on one side, a little curved and apparently somewhat compressed; surface ornamented by numerous distinct, regularly arranged, subimbricating annular marks of growth: septa separated, at about about two inches from the smaller end, by spaces near one-twelfth of the greater diameter of the shell at the same place; (siphuncle and aperture unknown). Length

[Oct.

of a septate specimen, incomplete at both ends, 1.18 inches; breadth of smaller end 1 inch, do. of larger end 2.97 inches.

Locality and position. Near Springfield, Illinois. Upper Coal Measures.

Genus NAUTILUS, Breynius.

NAUTILUS SUBGLOBOSUS.—Shell under medium size, subglobose, broadly rounded over the dorsum and sides; umbilicus (in casts) rather small, deep, conical, or with nearly vertical sides, showing rather less than the half of each inner whorl; volutions about three, increasing rapidly in size, especially in breadth, deeply embracing, subangular on the sides around the umbilicus; septa rather deeply concave, arching very slightly forward over the dorsal region, where they are separated by spaces a little less than one-fifth their own greater (transverse) diameter; aperture transversely subnate, or subreniform; lip deeply sinuous on the dorsal side; siphuncle central; surface apparently smooth. Length 2.11 inches; height 1.72 inch; breadth at aperture 1.95 inch.

This species is related to the following, but differs in having a wider umbilicus, with more rapidly expanding whorls. It is also more broadly rounded on the dorsum, and its septa are rather more closely arranged in proportion to the breadth of the whorls.

Locality and position. Chester, Illinois. Chester Limestone of Lower Carboniferous series.

NAUTILUS CHESTERENSIS.—Shell under medium size, subglobose, rounded over the dorsum and sides; umbilicus (in casts) small and deep, with nearly vertical walls, probably almost closed in adult specimens retaining the shell, apparently showing little of the inner whorls; volutions about three; increasing moderately in size, rather deeply embracing, abruptly rounded, or subangular around the umbilicus; septa not very concave, arching very slightly forward over the dorsal region, where they are separated by spaces a little less than one-fourth their own transverse diameter; siphuncle very nearly or quite central; aperture (as inferred from a section of the whorls) transversely subreniform; (surface unknown). Length 2.43 inches; height about 1.88 inches; breadth near the aperture about 1.80 inch; breadth of umbilicus (in cast) 0.54 inch.

Locality and position. Same as last.

NAUTILUS SPECTABILIS.—Shell large, subglobose; umbilicus moderately wide, deep, subconical, and showing rather more than half of each inner whorl; volutions increasing rather rapidly in size, or more than doubling their diameter each turn, broadly rounded over the dorsum, moderately concave within, and very narrowly rounded, or subangular along the middle of each side, where they are ornamented by a series of low nodes, some fourteen to sixteen of which may be counted on either side of each turn; section of the whorls subelliptical, the breadth being rather more than double the diameter from the dorsal to the umbilical side; siphuncle located a little outside of the centre. Septa distinctly concave, arching slightly forward over the dorsum, where they are separated by spaces less than one-fourth their own transverse diameter. (Surface, aperture, and number of whorls unknown.)

Length of a specimen, consisting entirely of septate whorls, 4.50 inches; height of do. 3.47 inches; breadth of the aperture 3.20 inches.

Locality and position. Gravel Creek, Randolph County, Illinois. Chester Limestone, of Lower Carboniferous series.

NAUTILUS (DISCUS*) PLANORBIFORMIS.—Shell of medium size, compressed

*We retain Prof. King's name *Discus*, in a subgeneric sense, for all the discoidal forms with a central siphuncle, simple septa, and slender contiguous whorls, all exposed in a wide, shallow umbilicus. It seems not to be quite synonymous with *Discites*, of McCoy, which is described as having the siphuncle "near the outer edge of the periphery." We have some doubts whether such forms should be retained in the same genus with the living species of *Nautilus*.

discoidal; umbilicus very wide, shallow, and showing nearly all of each inner whorl; volutions about four, increasing gradually in size, slightly embracing, nearly rounded in young shells, but becoming somewhat compressed on the sides and dorsum, in mature individuals—having a row of obscure nodes around each dorso-lateral margin; aperture a little oval, its longer diameter being in the direction of the plane of the shell: septa deeply concave, arching gently backwards on the sides and dorsum, and separated by spaces less than one-third the transverse diameter of the whorls; siphuncle small and central; surface apparently smooth.

Length 3.60 inches; height 3.21 inches; breadth 0.92 inch.

Locality and position. Alpine, Iowa. Coal Measures.

NAUTILUS (DISCUS) TRISULCATUS.—Shell discoidal, under medium size; umbilicus wide, moderately deep, and showing nearly all of each inner whorl; volutions slender, increasing very gradually in size, a little broader transversely than the diameter from the dorsum to the ventral margin, ventricose and rounded on each side, and provided with a deep rounded sulcus in each dorso-lateral region. Between these two sulci, the dorsum is narrow, prominent and less deeply grooved, the sulcus being bounded on either side by an angle. Surface retaining traces of rather strong longitudinal lines. Septa deeply concave, and arching distinctly backwards in each of the dorsal depressions, separated on the dorsum by spaces generally less than one-third the transverse diameter of the outer whorl at the place of measurement; siphuncle rather small, and placed a little nearer the dorsal than the ventral side. Length (of a specimen retaining a portion of the nonseptate whorl) 2.33 inches; height 1.82 inches; breadth about 0.87 inch.

Locality and position. Rockford, Indiana, in beds containing Carboniferous species of *Goniatites*, but usually regarded as Upper Devonian.

NAUTILUS (DISCUS) DIGONUS.—Shell rather small, subdiscoidal; umbilicus comparatively large, moderately deep, and showing all of each inner whorl; volutions about three or four, in contact, but not embracing, increasing gradually in size, broad and nearly flat on the dorsal side, which is marked by two very obscure longitudinal depressions near the aperture; distinctly angular on each dorso-lateral margin, thence rounding regularly into the umbilicus; surface of cast retaining traces of regular, equidistant longitudinal lines, and much finer and more closely arranged transverse striæ; aperture and section of the whorls nearly semicircular, the outer or dorsal side being almost straight, and the inner rounded. Septa distinctly concave; their margins curving obliquely backwards on the sides of the whorls, from the dorso-lateral angles, and deflected backwards in crossing the dorsum. Siphuncle small, located about one-third the diameter of each septum from the dorsal side.

Length, (of an imperfect specimen, about one-third of the outer whorl of which is non-septate,) 1.20 inch; height 1 inch; breadth across the dorsum of the outer whorl near the aperture, 0.62 inch; diameter of same from the dorsal to the ventral side, 0.40 inch.

Locality and position. Same as last.

NAUTILUS (DISCUS) SANGAMONENSIS.—Of this species we have seen but a single specimen consisting of about half of one volution. It is a little wider transversely than deep, and increases gradually in size from the smaller to the larger end, being evidently part of a discoidal shell, with an umbilicus about equalling the transverse diameter of the outer whorl. On the dorsum it is nearly flat, or but slightly convex, and the sides are a little concave. The ventro-lateral regions are obliquely flattened, so as to form an abrupt slope into the umbilicus, leaving a subangular prominence between the umbilicus and each slightly concave side. The ventrum is moderately concave along the middle, for the reception of the inner whorls, each of which was probably about one-third hidden.

[Oct.

On each dorso-lateral angle, there is a series of rather low nodes, about twenty to twenty-two of which probably existed on each side of the entire whorl. The transverse section of the whorls has a nearly quadrangular form, if we regard the small ventral concavity, and the two sloping ventro-lateral margins together as one side. The septa are moderately concave, and arch gracefully backward on each side, while in crossing the dorsum they arch less deeply in the same direction. The siphuncle is small, and located a little nearer the dorsal than the ventral side. (Aperture and surface markings unknown).

Length, as inferred from the curve, about 2 inches; height about 1.45 inch; breadth near the aperture 0.88 inch.

Locality and position. Sangamon County, Illinois. Coal Measures.

Genus GONIATITES, De Haan.

GONIATITES GLOBULOSUS.—Shell under medium size, length and breadth nearly equal, very broadly rounded on the dorsum; umbilicus deep, less than half as wide as the greater (transverse) diameter of the outer whorl; volutions more than twice as broad transversely, as from the ventral to the dorsal side; sides subangular around the umbilicus; aperture transverse, lunate, much wider than high; (surface unknown;) surface of internal cast slightly constricted at intervals, as if from an occasional thickening of the lip. Septa moderately distant; dorsal lobe nearly as wide as long, and deeply divided into two slightly diverging, simple, lanceolate branches; dorsal saddle linguiform, and a little narrower than the dorsal lobe, but equalling it in length, slightly contracted in the middle; superior lateral lobe as long as the dorsal saddle, but narrower, and pointed at the extremity; lateral saddle a little broader than the dorsal saddle, which it resembles in other respects.

Length 1.18 inch; height, 1 inch; breadth at the aperture, 1.11 inch.

Locality and position. Upper Coal Measures, Springfield, Illinois.

GONIATITES IOWENSIS.—Shell attaining a rather large size, discoidal or compressed on the sides, and narrowly rounded on the dorsum; umbilicus shallow, about one-half as wide as the breadth of the outer whorl from the ventral to the dorsal side, showing apparently a little less than half of each inner whorl; volutions increasing gradually in size, but slightly convex on the sides, nearly twice as broad on a line from the dorsal to the ventral margins, as the diameter at right angles to the same, profoundly grooved on the ventral side for the reception of each succeeding whorl; aperture, judging from a transverse section of the volutions, narrow sublunate. (Surface unknown.)

Septa rather crowded and deeply sinuous; dorsal lobe large, considerably wider than long, profoundly divided into two large lanceolate branches, each of which is a little narrower above than in the middle, and abruptly contracted to an acute point at the extremity; dorsal saddle linguiform, slightly oblique, a little larger than either division of the dorsal lobe, and longer than wide; superior lateral lobe infundibuliform, as long as the dorsal saddle, but not more than half as wide, acutely pointed at the apex; lateral saddle a little shorter than the dorsal saddle, but narrower at the extremity; inferior lateral lobe rather shorter than the superior, particularly on the ventral side, but resembling it in other respects; ventral saddle shorter than the others, and broadly rounded.

Length 4.21 inches; height 3.43 inches; breadth at the aperture 1.10 inch.

Locality and position. Alpine, Iowa. Coal Measures.

GONIATITES LYONI.—Shell attaining a medium size, compressed, discoidal; umbilicus large, or nearly twice the diameter of the outer whorl, from the dorsal to the ventral side, very shallow, and showing about four-fifths of each inner whorl. Volutions slender, increasing very gradually in size, compressed, or about one-third deeper from the dorsal to the ventral side than the trans-

1860.]

verse diameter, rather narrowly rounded on the dorsum, compressed convex on the sides, and provided with a shallow concavity along the ventrum for the reception of the inner whorls. Septa moderately distant, and deeply divided into six lobes and six saddles; dorsal lobe longer than wide, infundibuliform, and acutely pointed; dorsal saddle as long as the dorsal lobe, but wider, and rounded at the end; superior lateral lobe halbert-shaped, a little longer than the dorsal lobe, and sharply pointed at the extremity: lateral saddle longer and narrower than the dorsal saddle, linguiform, and regularly rounded at the summit; inferior lateral lobe similar to the superior, excepting that it is somewhat smaller; ventral saddle shorter and broader than the lateral saddle, rather oblique, and rounded at the end.

Length of an imperfect entirely septate specimen, 2.55 inches; height, 2.15 inches; convexity, 0.57 inch.

Locality and position. Rockford, Indiana, from the Rockford *Goniatite* bed, the exact age of which is somewhat doubtful, though it is generally considered of upper Devonian age.

NOTE.—In the last number of the Proceedings of the Academy, we described a new Echinoderm, under the name of *Melonites Danae*, mentioning, at the same time, that it differs from the type of the genus *Melonites*, in having only four, instead of eight double rows of pores to each ambulacrum. Since that time we have been led to regard this difference as being of more than specific importance, though until other species or better specimens are known, we cannot be quite sure it is of full generic value, especially since these forms seem to be exactly alike in other respects. We therefore now propose to found upon this species a subgenus, under the name of *Oligoporus* (ὀλίγος, few; and πῖρος, opening or pore.)

We also avail ourselves of the present opportunity to correct the following errata, which were overlooked in correcting the proof of the paper mentioned above:

Page 382, 15th line from the bottom, for *second radial* read *second radials*.

Page 382, for the 4th, 5th and 6th lines from the bottom, substitute *secondary radials* 1×10 : *resting partly on the second, and partly on the first primary radials; or, in the absence of the former, directly on the latter.*

Page 382, insert between the first and second lines from the bottom,—*Ana: plate 1, (known); varying much in size and form.*

Page 386, 12th line from the bottom, for *Actinocrinus scilutus*, read *Actinocrinus scitulus*.

Page 389, 2d, 5th and 23d lines from the bottom, and 4th and 5th line from the top, for *Forbsiocrinus*, read *Forbesiocrinus*.

Description of a New Species of *Exocetus*, from Chili.

BY CHARLES C. ABBOTT.

Exocetus Chiliensis, Abbott.—*Spec. char.* Head of medium size, without scales, and trigonal. Body much compressed and tapering to the tail; peduncle of the tail very slender. Eye unusually large, circular, diameter entering two and two-thirds times in the length of the side of the head; the orbits are one diameter distant. The posterior extremity of the maxillary bone extends to a vertical line drawn anteriorly to the anterior margin of the orbit. The nostrils are situated anteriorly to the eyes, and are about three diameters distant. Anterior to, between, and posterior to the orbits, are numerous pores, with channelled, slender depressions over the forehead and occiput, leading to the orifices of these pores. A well-defined, carinated row of scales commence, on each side, at

[Oct.

the lower margin of the opercular apparatus, and extend in a direct course, to the posterior insertion of the anal fin. The dorsal fin has its anterior insertion at the commencement of the posterior third of the total length of the body, and extends to within three-fourths of an inch of the insertion of the caudal fin. The pectoral fin has its insertion immediately behind the margin of the opercle, and the extremities of the rays reach the insertion of the caudal fin. The ventral fins are unusually small, and have their length equal to their width. The anterior insertions of the ventral fins are slightly posterior to the corresponding insertion of the dorsal fin, and its termination is opposite that of the dorsal fin. The caudal fin is deeply furcated, with the lower lobe of the fin one-third longer than the upper.

The numbers of the fin-rays are D, 16. P, 15. V, 6. A, 15. C, 20—

Color. In alcoholic specimens, the upper surface of the head and back are deep brown with a purple tint; lower portion of the sides and belly silvery white. The fins and opercle are bright silvery. Iris chestnut-brown.

Habitat. Chili.

Two well preserved specimens of this *Exocetus* are in the museum of the Academy, presented by Mr. C. S. Rand. The colors of this species during life are evidently much brighter, giving it an appearance surpassed in beauty by no known species.

Descriptions of Four New Species of North American Cyprinidæ.

BY CHARLES C. ABBOTT.

1. *Catostomus Texanus*, Abbott.—*Spec. char.* Head somewhat compressed, large, constituting somewhat more than one-fourth of the total length. Eye small, longitudinally oval; its longitudinal diameter constituting one-twelfth of the length of the side of the head. Mouth large, with the labial papillæ moderately developed. Body moderately compressed; a dorsal gibbosity extends from the occiput, attaining its greatest height an inch from the occiput, and disappearing at the anterior insertion of the dorsal fin; it is carinated throughout its whole extent. Dorsal fin one-third longer than high; its base enters five and a-half times in the total length; its anterior margin equidistant between the base of the caudal and the extremity of the snout. The insertion of the ventrals is opposite the centre of the dorsal fin, and much nearer the base of the caudal than the extremity of the snout. The posterior extremity of the anal fin extends beyond the rudimentary rays of the caudal. The scales are of medium size, with a subcentric nucleus near the anterior margins of their free portions, from which radiate numerous striæ, and around which are numerous well defined ridges. The lateral line is nearly straight throughout its course.

The numbers of the fin-rays are D, 15. P, 16. V, 10. A, 7. C, 18—

Color. Upper surface of the head, back, and sides, a dull slate color; belly white (not silvery). Throat yellow.

Total length, 14 inches.

Habitat. Colorado and New rivers.

I am indebted to Dr. John L. LeConte, for a note containing a description of this fish, noticing many peculiarities which the specimen (a stuffed one) does not now exhibit.

2. *Catostomus chloropteron*, Abbott.—*Spec. char.* Body considerably depressed, rapidly tapering posteriorly. The length of the head enters into the entire length of the body four and a-half times. Eye of medium size; the diameter of the orbit contained in the length of the head eight times. Mouth
1860.]

of medium size, with the labial papillæ very conspicuous. The dorsal fin, anteriorly, is slightly higher than long; its anterior insertion nearer the extremity of the snout than the insertion of the caudal fin. The anterior insertions of the ventral fins are opposite the anterior fourth ray of the dorsal and nearer the insertion of the caudal fin, than the extremity of the snout. The lateral line is nearly straight, and somewhat nearer the dorsal than the ventral outline.

The numbers of the fin-rays are D, 13., P, 16. V, 8. A, 7. C, 20.

Color. In alcoholic specimens, the back and sides above the lateral line are clear, light-blue, becoming pearly white upon the lower half of the sides and upon the belly. The fins are bright yellow.

Total length, $7\frac{1}{2}$ inches.

Habitat. Kansas.

Two well preserved specimens are in the Museum, presented by Dr. Wm. A. Hammond: both probably young.

3. *Gila affinis*, Abbott.—*Spec. char.* The body is slender; tail greatly attenuated. Head constituting somewhat more than one-fifth of the total length. Eye rather small, subelliptical, its diameter contained six and a-half times in the entire length of the head. The posterior extremity of the maxillary bone extends to a vertical line, drawn posteriorly to the anterior edge of the orbit. Anterior margin of the dorsal fin nearer the base of the caudal than the extremity of the snout. Anterior margins of the ventral fins somewhat nearer the extremity of the snout than the base of the caudal. The lateral line is nearly concurrent with the ventral outline.

The numbers of the fin-rays are D, 10. P, 16. V, 8. A, 9. C, 28—

3

Color. In alcoholic specimens, the back and upper third of the sides are dull violet, becoming pale pink below the lateral line and upon the belly.

Total length, $6\frac{3}{4}$ inches.

Habitat. Kansas.

The Museum contains a single specimen, presented by Dr. Wm. A. Hammond.

4. *Semotilus hammondi*, Abbott.—*Spec. char.* Body much compressed, and tapering rapidly to the tail. The head constitutes more than one-fourth of the length of the body, excluding the caudal fin. Snout conical; gape of the mouth oblique; the posterior extremity of the maxillary bone extending to a vertical line drawn through the extremity of the pupil. Eye subelliptical; its diameter entering eight times in the length of the side of the head. Anterior margin of the dorsal fin equidistant between the fork of the caudal fin and the extremity of the snout. Insertion of the ventrals slightly in advance of the dorsals. Dorsal fin somewhat higher than broad, and nearly quadrilateral. Anal fin one-third longer than broad, circular at its posterior extremity. Lateral line concurrent with the ventral outline. A number of irregularly situated tubercles on each side of the head, mostly existing in the orbital region.

The numbers of the fin-rays are D, 9. P, 18. V, 9. A, 9. C, 24—

3

Color. In alcoholic specimens, the upper surface of the head, back, and sides, are a deep umber brown; belly of a bright yellow. A black spot at the anterior base of the dorsal fin, and another very faint at the centre of the base of the caudal. A faint black line concurrent with the lateral line.

Total length, 7 inches.

Habitat. Kansas.

The Museum contains a single specimen of this fish, presented by Dr. Wm. A. Hammond, to whom the species is dedicated.

[Oct.

Description of new species of Apodal Fishes in the Museum of the Academy of Natural Sciences, of Philadelphia.

BY CHARLES C. ABBOTT.

Genus HERPETOICHTHYS, Kaup.

Diagn. Jaws nearly equally long. Snout short. Gullet wide. Eyes near the end of the snout. Head depressed, so that the eyes are nearer the upper surface than they are distant from each other laterally. Anterior nostril tubular at the extremity of the snout, and the hinder one at the commencement of the outer row of palatine teeth. Between the two, on the border of the upper lip, there is a small cutaneous tag. Pectoral fins moderately short. Six or seven nasal teeth, and from nine to thirteen vomerine ones.

1. *Herpetoichthys callisoma*, Abbott.—*Spec. char.* Head depressed; the facial outline slightly oblique, and without curvature. The jaws are flattened, and the snout terminates in a rather obtuse point. The eyes are large, longitudinally oval; the diameter of the orbits entering three times in the length of the side of the head, measuring from the angle of the jaws. The gill-opening is large and perpendicular; it is situated as much more posteriorly to the extremity of the snout, as anteriorly to the commencement of the dorsal fin, as four is to one. The dorsal fin arises nearly opposite to the tips of the rays of the pectoral, when it is extended backwards, and reaches to within a short distance of the extremity of the tail; it retains a uniform height until it nears the posterior eighth of the total length, when it rapidly decreases to its termination. The anus is situated slightly posteriorly to the anterior third of the total length; and, at its posterior margin the anal fin originates, and from thence proceeds the lower surface of the body, and is co-terminal with the dorsal fin.

The teeth upon the mandible and palate are biserial; the dentition elsewhere is uniserial. Nasal teeth eight; compressed, blunt, inwardly directed; four are upon the mesial line, the anterior two smaller than the others. Vomerine teeth eleven; these form a nearly straight line, and have the anterior six somewhat larger than the other five. Palatine teeth upon the outer row eleven; upon the inner row ten; they are similar to the nasal teeth. Mandibular teeth similar in shape to the nasal teeth, sixteen upon the outer row; ten upon the inner row.

Color. The head, and that portion of the back anterior to the pectoral fins, is dull brown, with a purple tint. On a line with the angle of the mouth, extending as far back as the base of the pectorals, this color is uniform, but below this line it becomes much paler and white, in irregular patches. Upon the head and neck there are numerous circular blackish spots, which occasionally run into each other, forming irregular blotches. The throat is longitudinally marked with slender black lines, which extend nearly parallel, and reach the base of the pectorals. The ground color of the body is a uniform yellowish-brown, lighter on the belly; along the sides, from the pectoral fin to the termination of the dorsal, are large, circular, equidistant, very deep brown spots, their diameter equal to two-thirds of the width of the body. Above and between the large lateral spots, exists a regular row of smaller, but similarly shaped spots; the first two commencing anteriorly to the insertion of the dorsal fin, and nearly joining upon the back. Beneath and between the large lateral spots are smaller ones of a similar shape; these are irregular in their position and number, and differ materially, in many respects, on the two sides of the body. The dorsal fin is white, marked with irregular spots, of a color similar to those upon the body. The anal fin is similar in its coloration to the dorsal. The pectorals have a number of very minute dots upon them.

1860.]

A row of circular spots commences on the belly, near the pectoral fins, and extends to the anus.

Total length, 38 inches. To anus, 13 inches.

Habitat. Pacific Ocean? Cabinet of the Academy.

A single specimen of this magnificent fish is in the collection presented by W. G. Burke, Esq. This specimen, at first glance, would not appear to belong to the genus *Herpetoichthys*; but the slight variations are not sufficient to refer the species to any other genus. The exact locality from which the species was obtained is uncertain, but various circumstances induce me to suspect it is a species belonging to the Pacific fauna.

Genus *PISOÖDONOPHIS*, Kaup.

Diagn. Teeth short, conic, and more or less blunt. Anterior nostril tube well developed, and approximating the corner of the mouth. Pectorals more or less fully developed.

2. *Pisoödonophis magnifica*, Abbott.—*Spec. char.* Head small, facial outline with an oblique curvature; the snout rather obtuse, with the upper jaw extending much beyond the lower, making the nasal teeth visible when the mouth is closed. The body is perfectly cylindrical, and tapers very gradually to the tail, which terminates in a conico-acute horny point. The dorsal fin has its anterior insertion at the occiput, and the fin terminates before it reaches the horny extremity of the tail. The anal fin is coterminous with the dorsal. The pectoral fin is small, circular, with twenty rays. The teeth are all very small, conical, and acute, six standing irregularly on the disc of the nasal bone. The teeth upon the palate, vomer, and mandible are biserial, and placed very close to each other. Palatine teeth ; vomerine teeth

Color. In alcoholic specimens, the ground color of this fish is pink, darkest upon the back, and nearly lost upon the belly, which appears white, without close inspection. At the base of the anterior nasal tubes are two very small dark chocolate-brown, semicircular spots; behind these, and anterior to the orbits, are situated two similar markings, but larger, and little deeper in color. Commencing at the insertion of the dorsal fin are two series of spots of chocolate color, separated only by that fin; these spots, if viewed from above, have the appearance of transverse bands. These spots are not, in every case, directly opposite, but they are generally so. Upon the sides is a single series of spots, of the tints of the dorsal markings, which are two-thirds of the width of the sides, measuring from the base of the dorsal to the centre of the belly. Upon the belly are three rows of small, circular spots, which are very irregular as to position.

Total length, 19 inches. To anus, 8 inches. To gill-opening, $1\frac{1}{2}$ inch.

Habitat. Sandwich Islands.

The Museum of the Academy contains two specimens, which were collected and presented by Dr. J. K. Townsend.

3. *Muraena acutirostris*, Abbott.—*Spec. char.* Head much compressed; the facial outline moderately oblique; the jaws greatly attenuated, very slender; the lower mandible somewhat the smaller, with a gentle upward curve at its extremity. The fold of the skin, enveloping the dorsal fin, is unusually thin, and arises within a short distance of the occiput, with a slope of about forty-five degrees. The fin is equal in width to seven-eighths of the width of the body, and has no perceptible decrease until it approaches the posterior eighth of the body, when it decreases rapidly, and at its termination is only equal to one-seventh of the width of the fin upon the back. The eye is large, circular, its diameter equal to one-fifth of the length of the side of the head, measuring from the angle of the jaws; the orbits are one diameter

[Oct.

distant, and the distance from the upper edge of the orbit to the facial outline is equal to the distance between the lower margin of the orbit and free edge of the upper lip. The gill-opening is rather small, oblique, situated as far posteriorly to the commencement of the dorsal fin as that is posterior to the angle of the jaws. (The pores upon the snout and lateral line, in this specimen, are not visible.)

The teeth are uniserial, compressed, and very acute; the palatines, vomerine, and mandibular teeth all inwardly directed. Nasal teeth fourteen; widely set, and from three to five minute teeth between each pair. Three teeth are placed upon the mesial line; the second one very slender, and the longest tooth in the mouth; the third is twice as great in circumference, and but little shorter than the second tooth. Twelve compressed, acute teeth are situated upon the vomer, in a direct line; the anterior tooth much the largest. Palatine teeth, thirteen, of a uniform size; the series commencing below the centre of the orbit and terminating shortly anteriorly to the angle of the jaws. The mandible is armed with twenty-six teeth upon each side; the anterior four of each side being nearly three times as great in size, more widely set, and the posterior pair have a single, compressed, very small tooth between them.

Color. The ground color of this species is a dark hair brown, nearly black upon the occiput and cheek, and along the base of the dorsal fin. The head, body, and both fins are irregularly reticulated with narrow bands of white, varying in width and becoming yellow on the posterior fifth of the dorsal fin, and upon that portion of the body, but in a less degree. Three broken lines of black extend along the body, from the angle of the jaws to the gill-opening. Iris chrome yellow. Total length $19\frac{1}{2}$ inches. To anus 9 inches. To gill-opening $2\frac{3}{4}$ inches.

Habitat. Sandwich Islands.

A single specimen of this peculiar *Muræna* was brought from the above locality, and presented to the Academy, by Dr. J. K. Townsend, to whom the Academy is indebted for many species of fishes, which enrich their ichthyological cabinet.

The peculiarity of this *Muræna*, which immediately falls under the notice of the ichthyologist, is the remarkably slender snout; which consequently gives the dentition an unusual aspect, in crowding the marginal nasal teeth and those upon the mesial line into close proximity; and the vomerine teeth so close to the palatines. The great acuteness of the teeth in every series, their close proximity, and inward direction, give this species a ferocious appearance, which certainly must be realized by every unfortunate fish, whose fate it is to be mangled by his jaws.

4. *Thyrsoidea Kaupii*, Abbott.—The genus *THYRSOIDEA* differs from *Muræna* by having the palatine teeth biserial.

Spec. Char. Head, facial outline, and general characters of the jaws, except their less tenuity, similar to *Muræna acutirostris*, Abb. The fold of the skin, enveloping the dorsal fin, is thick on the anterior portion of the fin, and prevents the rays from being felt. The commencement of the dorsal fin is twice as far distant from the gill-opening, as from the angle of the jaws. The eye is large, longitudinally oval; its longitudinal diameter entering four times in the length of the side of the head, measuring from the angle of the jaws. The anterior nostrils are furnished with long slender tubes, which extend to the free margin of the lip; the posterior nostrils are not tubular. The anus is situated two inches anteriorly to the centre of the total length. The body, posteriorly to the anus, tapers slowly to the extremity of the tail, which is very acute.

The nasal teeth number twelve; they are tall, slender, inwardly directed; with two very minute teeth between nearly every pair. Two teeth, similar to the marginal nasal teeth, stand upon the mesial line, and are the tallest teeth

in the mouth. Seven short-conical, rather blunt teeth, with the anterior two twice as large as the others, stand upon the vomer; the anterior second tooth a little beyond the line of the others, otherwise they form a straight series. The palatine teeth number twelve or thirteen; they are very much compressed, acute, are set near to each other, and are inwardly directed; these form the outer and principal series. Two much larger ones, very near the commencement of the outer series, and within that series, form the interior row. This inner row is similar in its characters, except as to number, to the outer row of palatines. The mandible is armed with a compliment of twenty-two, short, compressed teeth, all inwardly directed; the six upon the extremity of the jaw, are three times as great in length, as the principal series, and between them is generally a pair of minute teeth, which are hidden by the lip, and often entirely concealed in the soft parts of the jaw.

Color. The head and body are of a uniform dark umber, the back and sides crossed by coarse reticulations of bright sienna. The fins are nearly black, with the reticulating bands that cross the body, continuous upon them. The head is free from the bands of sienna, as is the throat and a small anterior portion of the belly. Upon the throat and sides of the neck are narrow longitudinal black lines, extending as far back as the gill-opening.

Total length 18 inches. To anus 8 inches. To gill-opening 2 1-5th inches.

Habitat. Sandwich Islands.

This handsomely marked species of *Thyrsoidea* has every appearance of a *Muraena*, and unless closely examined might be referred that genus. The presence of the inner row of palatine teeth, however, preclude the propriety of its being so classed. This species belongs to that class of the genus, which has but two teeth upon the inner row of palatines; a peculiarity which is of too slight importance to be considered generic, and is too constant to be considered specific. The specimen from which the description was taken, was presented to the Academy by Dr. J. K. Townsend.

This species is named in honor of Dr. J. J. Kaup, of Darmstadt, to whom science is indebted for the first systematic elucidation of the history of the Apodal Fishes.

5. *Thyrsoidea eurosta*, Abbott.—*Spec. char.* Head large, depressed: the facial outline very slightly oblique. The fold of the skin enveloping the dorsal fin is very thick, and arises slightly behind the occiput, nearly perpendicularly; the fin is of uniform height for two-thirds of its length, when it slowly decreases to its termination. The eye is large, circular, and slightly behind the extremity of the snout; the orbits are one diameter and a half distant. The jaws are of equal length, and rather slender; the lower jaw with a slight upward curve at its extremity, making the large mandibular teeth partially visible when the mouth is closed. The nasal teeth number ten; they are biserial, and the inner row are twice as large in every respect as the outer row; they are conical, acute, and with a decided inward inclination. The palatine teeth number twenty-eight upon the outer row; and nine upon the inner row. The teeth constituting the outer row of palatines are short, very much compressed and acute; they have a moderate inward inclination. The inner row of palatines are widely set, of various lengths, and have a gape in their series, commencing posteriorly opposite the posterior margin of the orbit, and ceasing opposite the anterior edges of the orbit; the teeth upon the inner series are more than twice as large in all respects as those of the outer row. The vomerine teeth number twelve, nine of which are in a direct line, and the remaining three concurrent with the central three of the series. The lower jaw is armed with a complement of twenty-four compressed, acute teeth, having a decidedly inward inclination; the posterior twelve of these are closely set, and in an unbroken series; the anterior twelve are arranged in pairs, except at the extremity of the jaw, where they form two square patches of four teeth each.

Color. The body and head are of a uniform reddish brown, which become

[Oct.

nearly black upon the under surface of the tail. The whole surface is minutely spotted, and reticulated with pale yellowish.

Total length, $13\frac{1}{2}$ inches. To anus 6 inches. To gill-opening $1\frac{1}{2}$ inches.

Habitat. Sandwich Islands.

This species is remarkably stout for its length, and presents an unusually large number of teeth for the size of the animal. But a single specimen is in the museum; which specimen was collected and presented by Dr. J. K. Townsend.

6. *Thyrsoidea concolor*, Abbott.—*Spec. char.* Head compressed, slightly depressed upon the occiput; jaws slender. The eye is large, circular, its diameter contained four times in the length of the side of the head, measuring from the angle of the jaws. The dorsal fin originates at the occiput, and has a slope at its commencement, of about forty-five degrees, the fin is of a uniform height, until midway between the anus and the extremity of the tail, when it commences gradually to decrease. The anus is slightly anterior to the centre of the body, and the anal fin, that there has its commencement, is equal in width to one-tenth of the width of the body, and extends to the extremity of the tail, preserving throughout a nearly uniform width.

The nasal teeth number twelve; they are all slender, conical and acute, with a pair of minute, compressed teeth between each pair of the marginal teeth; three teeth stand upon the mesial line, the centre one of which is the tallest tooth in the mouth. The outer row of the palatine teeth number sixteen; they are of uniform height, compressed, acute and with an inward tendency. The inner row consists of two teeth, placed at the commencement of the outer row; they are similar in all their characters to the teeth upon that row, except in being of nearly triple the height. On the vomer, exist ten conical, acute teeth, in a straight line; they are of a uniform size. The mandible is armed with a complement of twenty compressed, acute teeth, having a decided inward inclination, but in a less degree than in the palatines; the anterior six teeth are much larger than the general series, and are more conical in their shape.

Color. The head, body and fins are of a uniform purplish brown, varying in its intensity upon the sides.

Total length, 11 inches. To anus $5\frac{1}{4}$ inches. To gill-opening $1\frac{1}{4}$ inches.

Habitat. Vera Cruz.

A single specimen is in the museum, presented by Dr. Burroughs, and labelled as procured at the above locality.

NOTE.—On pages 326 and 327, *hujus operis*, there are described two *Eltheostomoids*, named respectively—*Pæilosoma transversum* and *Pileoma cymatogramma*.

As the name *Pæilosoma*, has been changed to *Pæcilichthys*, the name of the species will hereafter be

Pæcilichthys transversus, Abbott.

Syn. *Pæilosoma transversum*, Abbott, Proc. Acad. Nat. Sci. Phila. 1860, p. 326.

As the genus *Percina*, Hald. is congeneric with *Pileoma*, De Kay; and is prior to that genus, the species described as *Pileoma cymatogramma*, Abb. will hereafter be

Percina cymatogramma, Abbott.

Syn. *Pileoma cymatogramma*, Abbott, Proc. Acad. Nat. Sci. Phila. 1860, p. 327.

NOTE.—On page 365, *hujus operis*, for the figure 13, given as the number of rays of the anal fin, in *Astrosopus guttatus*, Abb., please substitute the figure 10.

Report upon the Reptilia of the North Pacific Exploring Expedition, under
command of Capt. John Rogers, U. S. N.

BY EDWARD HALLOWELL, M. D.

EDITED BY E. D. COPE.

Nicaragua.

SAURIANS.

GECKOTIANS.

Geckotian Lizards—Lezards Geckotiens D. & B.

HEMIDACTYLUS Cuv.

Sect. DACTYLOPERES. *Peropus* Wieg.

Div. A.—*Subdigital lamella entire.*

HEMIDACTYLUS PRÆSIGNIS nob.

Proceed. Acad. Nat. Sci., Oct. 1856, p. 222.

Char. Rostral plate bilobed; seven superior labials; mental plate very large, the sides excavated, rounded posteriorly; six plates in a transverse row beneath the chin, the two middle ones much smaller than the lateral; tail slender, long; color uniform chocolate-brown above; abdomen and under part of tail whitish. Total length, 6 inches. Tail, 3 inches, 3 lines.

Found also in Jamaica.

SPHÆRIODACTYLUS Cuv.

For gen. char. see D. & B., tom. ii. 401.

SPHÆRIODACTYLUS MILLEPUNCTATUS nob.

Spec. char. Dorsal scales very small, unicarinate; color reddish, with numerous small brownish spots; under parts white; length of head and body, 11 lines.

Description. Scales upon muzzle larger than those upon the vertex; those upon body remarkable for their small size, being much smaller than those of the specimens in the Museum, marked *nigropunctatus*, from Jamaica, or of *Sphæriodactylus fantasticus*, from Mexico. Abdominal scales carinated, very much larger than those upon the throat and chin; color reddish-brown above, with numerous brown spots, intermingled with very minute white points; under parts white. Two specimens.

IGUANIANS.

Sauriens Eunotes D. & B. Lezards Iguaniens.

ANOLIS D. & B.

Div. A.—*With fingers but slightly dilated.*

ANOLIS REFULGENS Schlegel.

Draconura nitens Wagl. Dum. & Bib., tom. iv. p. 91.

This species is very well characterized by the larger row of scales along the median line of the back; the granulations upon the sides are much smaller than those of the back and abdomen, and there is a larger row of scales upon the back of the tail; immediately behind the mental plate are six scales, in a transverse row, the four intermediate quite small, the lateral much larger; the occipital scale lies in a well marked depression, the supra-orbital ridges are nearly in contact, and on the front part of the head is a longitudinal

[Oct.

ovoid depression, the scales of which are smooth; those upon the snout carinated, as also the scales upon the abdomen; the colors of these specimens are much darker than that of another; brownish above, and orange colored mingled with yellow beneath; in the other, the general color is golden yellow, lighter beneath, with a tinge of white upon the abdomen. Total length, $5\frac{1}{4}$ inches; of tail, 2 inches 8 lines. Found also in Surinam. (D. & B.)

ANOLIS LONGICAUDA nob.

Spec. char. Scales upon the muzzle keeled; eight superior labials; scales of abdomen carinated; dorsal scales indistinctly carinated; median rows larger; tail very long; color green; gular pouch orange, with two indigo-colored lateral stripes, one on each side. Total length, 5 inches, 5 lines.

Description. 44 teeth in the upper jaw; 10 posterior tricuspid; 43 in the lower; the 10 or 11 posterior distinctly trilobed; scales upon the muzzle keeled; two crests upon the head, prolongations of the superciliary ridges, circumscribing laterally a longitudinal depression, broader in front; the scales in this depression polygonal, much larger than those upon the muzzle, keeled; eight superior labials; six rows of scales upon the side of the head anteriorly, between the superior labials and its upper margin; auricular opening moderate; abdominal scales much the largest, keeled; those upon the sides very small, granular; back covered with polygonal scales, indistinctly carinated; several of the median rows larger than the others; breadth of head posteriorly, one-half of its total length; body and extremities slender; tail very long and tapering, round at base, more than double the length of head and body; color bluish above, probably green during life; lighter upon the tail; abdomen, chin, under part of tail and extremities very light blue; gular pouch orange with two indigo-colored stripes, one on each side. Total length 5 inches, 5 lines; of tail, 3 inches, 10 lines. One specimen.

Gen. remarks. This species is quite different from *An. sericeus*, a Mexican species, in which the scales upon the back are granular, and of nearly equal size; it is also a stouter animal, and the tail is shorter. *Anolis tropidogaster* nob., from New Grenada, is destitute of the two well marked crests so characteristic of this species, and the plates lying at the bottom of the longitudinal depression between them are much longer than those on the corresponding position in *tropidogaster*; and the shape of this depression is quite different, being much broader in front, in *longicauda*. In *Anolis pulchellus* D. & B., the carinations of the scales before the back and abdomen are indistinct; whereas, in the present species they are well marked; the tail in the former is but one-third the total length.

ANOLIS CUPREUS nob.

Spec. char. Scales upon muzzle carinated; supraorbital ridges separated by several rows of scales; three or four rows of scales intervening between each interorbital ridge and the occipital scale; six superior labials; abdominal and dorsal scales very distinctly carinated; those upon tail very strongly keeled; copper colored above, whitish beneath; throat orange; in some specimens a black spot upon the shoulder. Length of head and body 1 inch 8 lines.

Description. A small species. Scales upon the muzzle very distinctly carinated; supraorbital ridges separated by several rows of scales; three or four rows of scales intervening between the supraorbital ridge and the occipital scale; six or seven supraorbital scales separated from the supraorbital ridge by a single row of granules; three scales carinated, and two of them much larger than the others; six superior labial scales; six or seven rows of scales upon the sides of the head anteriorly above the supraorbitals; auricular opening moderate; scales of the flanks smaller than those upon the back and abdomen; abdominal and dorsal scales very distinctly carinated; those upon
1860.]

tail very strongly keeled; copper colored above, whitish or yellowish white beneath; throat often orange, and in some specimens a black spot over the shoulder. Length of head and body 1 inch 8 lines. Seventeen specimens.

DACONURA Wagler, Wiegmann.

DACONURA BIVITTATA nob.

Spec. char. Head covered with polygonal plates of unequal size; color brownish above, with two lateral white vittæ, bordered with black, one on each side, commencing behind the eyes, and extending the whole length of the body, as far as the base of the tail; under parts white. Total length $4\frac{1}{2}$ inches; of tail, 1 inch 4 lines.

Description. Seven supra labials, nostril in a single scale; plates upon front and muzzle unicarinate; superciliary wide, separated by two rows of scales, a single row between former and occipital scale; a single row of scales much larger than the rest, commencing at about three lines from the occiput, and extending along the median line of the back and tail above; scales upon back larger than upon sides; those of the belly very distinctly carinated; a gular fold; tympanum quite distinct; no femoral or anal pores; scales upon under part of tail strongly carinated; extremities slender; third and fourth fingers of nearly equal length; fourth toe much the longest; fingers and toes slender, not dilated, inner margin serrated; fingers and toes 5—5; tail very long, slender, tapering to a point.

Coloration. General color olive above, somewhat darker upon the sides; with two narrow white vittæ, bordered with black, one on each side, commencing behind the eye and extending the whole length of the body, being lost upon the base of the tail; extremities indistinctly barred with brown above; under parts whitish.

Habitat. Nicaragua. A single specimen.

SCELOPORUS Weigm.

SCELOPORUS SCALARIS Weigm.

Twenty-six specimens (sixteen young).

TEIDÆ.

CNEMIDOPHORUS.

CNEMIDOPHORUS DECEMLINEATUS nob.

Spec. char. Nostril in the posterior margin of the naso-rostral plate; color grey above, with ten white lines, five on each side of the back; eight rows of abdominal scales. Total length $7\frac{1}{2}$ inches; tail $4\frac{1}{2}$ inches.

Description. The nostril opens in the posterior edge of the naso-rostral plate; five superior labials; a single row of large transverse scales on the anterior surface of the forearm; twenty-two femoral pores in the single specimen. The ground color above is greyish or olive; in the youngest specimens the intermediate space between the four upper white lines, jet black, forming three distinct jet black bands on each side; these jet black bands are more distinct in the youngest specimens; in the oldest the upper surface is of a uniform olive color, darker upon the sides; the entire surface of the abdomen, and the greater part of the under surface of the thighs, jet black; anterior part of forearms white spotted; these spots quite small, and by no means so distinct or near so large as in *C. lemniscatus*; in the younger specimens, presenting the form of vermiculations.

Dimensions. Length of head 10 lines; of neck and body to vent, 2 inches 1 line; of tail $4\frac{1}{2}$ inches.

Habitat. Nicaragua. Seventeen specimens.

[Oct.

Gen. remarks. This species is readily distinguished from *C. lemniscatus*, the latter having but nine lines, the middle one of which bifurcates toward the occiput, and the sides more or less white spotted.

CNEMIDOPHORUS QUADRILINEATUS nob.

Spec. char. Nostril between the naso-rostral and naso-frenal plate; five supra-labials; eight rows of abdominal scales; color brownish black above; jet black upon the sides, with two very narrow white lines, extending from the temples in a line with the posterior margin of the eye, extending as far as the posterior extremities; a single row of broad scales upon the anterior surface of the forearms. Total length 3 inches 3 lines.

Description. The above appears to be one of the smallest of the species of *Cnemidophorus*. It is readily distinguished by its small size, and the peculiarity of its markings; in front of the gular fold is a row of four large scales, followed by several smaller ones; the back, between the two inner stripes, is vermiculated with black, the sides white spotted; the tail presents a white lateral stripe, a continuation of the lower one upon the side; under parts bluish, lighter upon the chin.

Dimensions. Length of head 5 lines; of body to vent 11 lines; length of tail $2\frac{1}{2}$ inches; total length 3 inches 4 lines.

Habitat. Nicaragua. Four specimens.

Gen. remarks. *Cnemidophorus præsignis* B. & G., from Chagres, said also to be common at Para, has ten rows of abdominal plates.

AMEIVA Cuvier.

AMEIVA PULCHRA nob.

Spec. char. Nostril between the naso-rostral and naso-frenal plates; a group of large scales upon the chin, surrounded by smaller ones; three or four large scales in front of the gular fold, surrounded by smaller scales; eight rows of abdominal plates; color olive above, with two lateral stripes of brown, one on each side, with numerous transverse rows of black. Total length $8\frac{1}{2}$ inches.

Description. This is a beautiful species of *Ameiva*, presenting distinctly the characters of the genus, viz. —the retractility of the tongue beneath the glottis, which distinguishes *Ameiva* from *Cnemidophorus*. In a natural series, it would take the place of *Ameiva Sloanii*, which it resembles very closely in size, but the neck is not near so narrow as in that species; there is but a single row of large transverse scales in front of the forearm; the granulations upon the back are distinctly larger than those upon the sides; twenty femoral pores; the color of the head is light brown above, and upon the sides; olive colored or light brown upon the back, with a band of deep brown along each side, presenting numerous transverse bars of black; abdomen bluish, the rest of the under surface white, with a tinge of blue; in many of the specimens a row of white spots extends from the tympanum to the posterior extremity, occasionally assuming the form of a very narrow white line; a white spot upon the temple, and three or four around the margin of the tympanum. Eighteen specimens.

Habitat. Nicaragua.

SCINCIDÆ *Ophiophthalmidæ*.

Among the saurians of the collection from Nicaragua are two small lepidosaurians belonging to the subfamily *Ophiophthalmidæ*, and which appear to belong to a genus not yet described, having four toes to each of the anterior, and the same number to each of the posterior extremities. For the distinctive characters of the genera already known, see D. et B., tom. v., 806-831. It may be thus characterized;—No eyelid; nostrils lateral, opening in a single scale; no supero-nasals; teeth conical, simple; tongue bifid, 1860.]

covered with scales; palate without teeth, with a triangular excavation; auricular openings; four extremities each with four toes; scales smooth, neither femoral or præanal pores; palpebral circle, more or less complete. It will be observed that these characters are precisely the same as those of the genus *Ablepharus* of Fitzinger, as given by D. & B., except that the number of fingers and toes is four instead of five.

Gen. BLEPHARACTISIS nob.

BLEPHARACTISIS SPECIOSA nob.

Spec. char. An internasal, two fronto-nasals, a small frontal, a large interparietal, two parietals; color dark olive above, with two dark lateral stripes, one on each side; under parts lighter. Total length $1\frac{1}{2}$ inches; of head and body 8 lines.

Habitat. Nicaragua. Two specimens.

OPHIDIANS.

SYNCRANTERIDÆ.

LEPTOPHIS Bell.

LEPTOPHIS MARGARITIFERUS D. & B., tom. vii. p. 539.

Herpetodryas margaritifera Schlegel, *Essai la Physionomie des Serpens*, tom. i. p. 151, and tom. ii. p. 184. Two specimens.

Fam. CALAMARIDÆ.

LIONINIA nob.

Gen. Char. Frontal stout, hexagonal, somewhat longer than broad; nostrils between two plates; no frenal, one preocular, two postoculars; seven superior labials, the eye resting on the third and fourth; pupil round; scales smooth, quadrangular; tail quite stout, with bifid scutes. Size that of a Calamarian; palatine as well as mandibular teeth apparently of equal length.

LIONINIA VERMIFORMIS nob.

Spec. char. Color whitish above, with numerous small brown spots formed by a series of black spots, occupying each scale; in some specimens a narrow black dorsal line, extending from the occiput as far as the extremity of the tail; in others this line is quite indistinct; a spot or blotch upon the occiput, of the same color as that of the body; head brown above, lighter upon the snout; under parts of animal white. Total length, 5 inches, 1 line; tail 8 lines. Ab. scut. 122; a single preanal; subcaud. 26.

Habitat. Nicaragua; 3 specimens.

Gen. remarks. In the arrangement of the plates upon the head, this genus resembles very closely *Streptophorus*, but the form of the scales is quite different,—which in the latter genus are more or less carinated. It belongs to the family of Calamarians, as defined by Dumeril & Bibron, viz.: Body very slender, rounded, and about the same thickness from the head to the tail. E. G. tome vii. p. 48. It differs, however, from each of the nine genera of which that family is composed. In Calamaria and *Rhabdosoma*, the nostrils open in a single scale, as well as in *Rabdion*, *Homalosoma* and *Carphophis*. In *Elapoidis*, the scales are carinated. In *Aspidura*, the urostega are in a single row.

STENOCEPHALIDÆ. (Serpens Opistoglyphes) D. & B.

Gen. CONIOPHANES Hallowell.

Char. Head very much flattened, pupil round, supraciliaries not projecting; nostril in a single plate; a postnasal about twice as high as it is long; a somewhat quadrangular frenal; one antocular, two postoculars; a single

[Oct.

anterior temporal; two internasals; two prefrontals, much longer than the internasals; a frontal longer than broad, occipitals large. Head somewhat broader than neck, posteriorly; scales smooth, lanceolate, 19 or 21 rows; nearly quadrangular upon the tail; anal and subcaudal scutes bifid; abdomen slightly angular; tail long and tapering; posterior tooth much longer than the rest and distinctly channelled; the teeth in the upper jaw increase in length as they recede backward.

CONIOPHANES FISSIDENS nob.

Spec. char. 19 rows of smooth scales near the middle; color brownish, approaching to violet, with two somewhat indistinct lateral stripes, and a median dark colored one upon the back; abdomen whitish, with a row of minute black points on each side and upon the tail; a narrow white vitta, commencing on the first labial, passes beneath the eye along the temples, and is lost upon the sides of the neck; another, shorter upon the back, commencing at the occiput. Total length 8 inches; of tail $7\frac{1}{2}$ inches; circumference 1 inch.

Habitat. Nicaragua. One specimen.

OXYCEPHALIDÆ.

DRYOPHIS AENEUS. One specimen.

CONOCERQUES. (Serpens Proteroglyphes.)

ELAPS Schn.

ELAPS MELANOCEPHALUS nob.

Spec. char. Entire head, chin and throat black; 16 black rings upon the body, margined with white; 4 distinct rings upon tail; inter-spaces between black rings spotted with black; 200 abdom. scuta; a double præanal; 52 subcaudal; 15 rows of scales.

Habitat. Nicaragua. One specimen.

BATRACHIA ANOURA.

RANIDÆ.

CYSTIGNATHUS MELANONOTUS nob.

Spec. char. Color black above, black spotted; a black subround spot between the eyes; under parts white, minutely mottled and spotted with brown; body and extremities slender.

Description. Head of moderate size, eyes not remarkably prominent, tympanum well developed, tongue obcordate, not notched posteriorly; palatine teeth in two transverse rows; the anterior margin on a line with the posterior margin of the posterior nares; color as stated in the specific character.

Dimensions. Length of head 4 lines; greatest breadth 3; length of head and body 9 lines; length of anterior extremities 6 lines; of posterior, 1 inch; of thigh 3 lines; of leg 4; of tarsus 2 lines; of foot to extremity of longest toe $4\frac{1}{2}$ lines.

Habitat. Nicaragua. One specimen; perhaps the young of a larger animal.

HYLIDÆ.

HYLA GRISEA nob.

Spec. char. Skin smooth, tongue obcordate, notched posteriorly, palatine teeth in two fasciculi behind the posterior nares; color light grey, a brown above, with darker maculations; length $1\frac{1}{2}$ inches.

Description. Head triangular; snout somewhat acute; nostrils two lines apart; tongue obcordate, slightly notched posteriorly; extremities slender; toes palmate at their base, the webs reaching to the proximal extremity of the second phalanx, tympanum of moderate size, eyes slightly prominent. Color grey or brownish above, with a transverse bar of darker grey between the

eyes; behind this a blotch with irregular margins, resembling the letter W; there are also upon the back irregular blotches of a darker grey than the surrounding surface; thighs mottled posteriorly with black and white, varied with grey in front; legs and tarsi with transverse bars of grey, also arms and forearms; under parts white.

Dimensions. Length of head 8 lines; greatest breadth 6; length of head and body 1 inch, 8 lines; length of anterior extremities 1 inch; of posterior, 3 inches; of thigh 8 lines; of leg 11; of foot to extremity of longest toe 11.

BUFONIDÆ.

BUFO MELANOGASTER nob.

Spec. char. Supra-orbital ridges slightly developed; internal nares of moderate size; tongue elongate, cordiform, rounded posteriorly; free for rather more than half of its length posteriorly; color grey with a longitudinal row of subround black spots on either side of the median line; extremities varied with black; under parts yellow marbled with black; length 1 inch, 1 line; of posterior extremities 1 inch, 3 lines; of anterior, 8 lines.

Habitat. Nicaragua. One specimen.

Gen. remarks. Most probably the young of a larger animal.

California.

SAURIANS.

IGUANIENS *Pleurodotes* D. & B.

SCELOPORUS BISERIATUS nob.

One specimen.

BATRACHIANS.

Urodela *Atretoderes* D. & B.

ANAIDES LUGUBRIS Baird. Six specimens—three adult, three young.

The lateral yellow spots are much more distinct in these specimens than in others in our collection. They are of a bright chrome yellow color, and irregularly disposed. In the young specimens, these spots are indistinct.

TARICHA TOROSUS Grans. One specimen, taken near Vallejo, California, Nov., 1855, by Mr. Wright.

BATRACHOSEPS ATTENUATUS Gray. Eight specimens—six adult, two young.

Oceania.

CHELONIANS.

CHELONIA MYDAS (young). Seven specimens. In five of these the nuchal plate is bifid.

Habitat. Bonin Islands.

SAURIANS.

VARANIDÆ.

VARANUS BIVITTATUS D. & B.

One specimen.

Habitat. Gaspar Straits.

SCINCOIDIANS ou Sauriens Lepidosaures D. & B.

EUPREPIS Wagler.

EUPREPIS CONCOLOR nob.

Spec. char. Nasal plate rounded posteriorly, anterior margin curvilinear;

[Oct.

supero-nasals rather slender, contiguous; internasal lozenge-shaped; two fronto-nasals in contact; a frontal long with an acute angle anteriorly, its lateral margins nearly straight; two fronto-parietals rather long; an inter-parietal, two parietals; a small freno-nasal, two frenals, the anterior smaller than the posterior and nearly quadrangular in shape; two freno-orbitals; seven superior labials, inferior eyelid scaly; præanal scales unequal, the two middle oblong; scales of neck strongly tricarinate; color uniform brown above, white below. Length 7 inches, 8 lines; of tail 4 inches, 5 lines; of head 10 lines.

Habitat. Gaspar Straits. One specimen.

Gen. remarks. Dumeril & Bibron describe thirteen species of *Euprepis*, of which but two have the inferior eyelid destitute of a transparent disk, viz.: *E. Sebæ* and *E. Ernesti*. From both of these the species above described differs remarkably. In the latter the supranasals are not contiguous; in the former the carinæ upon the scales are indistinct; it is also a larger animal. The specimen above described was taken on South Brother Island, Gaspar Straits, by Mr. Squires, of the U. S. steamer *T. Hancock*. It is common. The Malay name is *Kædal*.

ABLEPHARUS.

ABLEPHARUS NIGROPUNCTATUS nob.

Spec. char. Internasal four-sided; the sides nearly equal; the posterior angle rounded; but much more acute than in *A. Peronii*; the fronto-parietals quadrilateral; no inter-parietal; two parietals, no naso-frenal; two freno-orbitals; seven superior labials; six præanal scales, the two middle the largest. Color greenish olive above, marked all over with black spots, the spots on the sides agglomerated so as to form a black band extending from the posterior margin of the eye as far as the posterior extremities; extremities and tail black spotted, the black spots smaller and most distinct upon the under part of the tail; chin black spotted; abdomen, as well as ground color of chin and under part of tail and extremities, light green.

Dimensions. Length of head 4 lines; greatest breadth $2\frac{1}{2}$; length of body 1 inch, 3 lines; of tail 8 lines.

Habitat. Bonin Islands. One specimen. Taken Oct., 1854, by Capt. Rodgers.

ABLEPHARUS PERONII D. & B. Tom. v. p. 814. Three specimens.

Habitat. Tahiti.

LYGOSOMA.

LYGOSOMA VERTEBRALE nob.

Spec. char. Lower eyelid transparent; two fronto-parietals; nasal plates quite separate; internasal five-sided; fronto-nasal not contiguous; two fronto-parietals; one inter-parietal; two parietals; frontal long, acutely angular posteriorly, obtusely so in front. Color: Head brown, mottled with darker brown upon the sides; a light colored stripe extending from the occiput as far as the root of the tail; on either side a row of dark brown blotches with minute intervening spots; a broad dark brown colored band on each side, extending from the temple along the side, about half-way down the tail; above this band, the ground color lighter, resembling that of the vertebral band; upper part of tail yellowish, minutely spotted with brown; abdomen white with a tinge of blue; chin, throat and under part of tail yellowish, brown spotted.

Dimensions. Length of head 4 lines; greatest breadth 2; length of body to vent 1 inch, 2 lines; of tail 11 lines. Total length 2 inches, 4 lines.

Habitat. Sandwich Islands.

Gen. remarks. A new and interesting addition to the species, not very numerous, of the genus *Lygosoma*.

1860.]

OPHIDIA.

Sub. ord. Opisthoglyphes.

Gen. MEGALOPS nob.

Gen. char. Mandibular teeth, increasing in length posteriorly, recurved, nearly straight; two internasals much smaller than the prefrontals; frontal a little longer than broad, pentangular; a frenal; two antoculars, two postoculars; eye resting on the fourth supra-labial; pupil ovoid; eyes very prominent; body slender, much compressed; abdomen angular; tail rather short.

MEGALOPS MACULATUS nob.

Spec. char. Twenty-one rows of smooth scales; body presenting numerous sub-quadrangular and oblique blotches above, of a brown color; intermediate spaces white with a tinge of yellow; under surface white.

Abdom. scuta 170. A bifid præanal; 61 subcaudal scutellæ.

Dimensions. Length of head, neck and body 1 foot, 2 inches, 10 lines; length of tail $3\frac{3}{4}$ inches.

Habitat. Tahiti. One specimen, collected by Mr. Adams.

Gen. remarks. The posterior teeth in the upper jaw have been destroyed in the specimen, so that it is impossible to determine the family to which it belongs; most probably of the order Opisthoglyphes; the head is otherwise much injured. A small and not very prepossessing looking serpent.

Sub. ord. Serp. Aglyphodontes ou Azemiophides, *D. & B.*

Gen. AEPIDEA nob.

Char. Head long and narrow, broader posteriorly, almost truncate in front; teeth smooth recurved, the anterior, both in the upper and lower jaw, longer than the posterior; the same is the case with the palatines, equally spaced; nine plates upon the top of the head, the prefrontals remarkable for their large size; frontal longer than broad; two large occipitals; body very long, much thicker in the middle, compressed, with smooth scales, broader and shorter upon the back than upon the sides; abdomen angular; tail about one-third the length of head and body; urostega bifid; præanal scute bifid.

AEPIDEA ROBUSTA nob.

Description. The teeth are strong, sharp-pointed, much inclined backward, the eyes are of moderate size, the pupil round; the rostral plate is triangular in shape, broader than high, the internasals of moderate size, the prefrontals very large, and more or less rhomboidal in shape; the frontal quite broad anteriorly, its latero-superior angles bevelled, presenting an obtuse angle posteriorly; the supra-oculars long, of moderate breadth behind; the occipitals much longer than broad; nostrils between two plates, large; the posterior the larger of the two; the frenal is remarkable for its great length and unusual position; its upper margin is curved, terminating in a point posteriorly, about one-half of it passing below the antocular; there are ten superior labials; the eye resting on the sixth and seventh; the seventh is larger and of quite a different shape from the others, its posterior portion being prolonged upward and backward to meet the inferior postocular; the antocular is remarkable for its very large size; it is more or less rhomboidal in shape, in contact in front with the prefrontal, above with the frontal and supra-ocular, below by the greater part of its extent with the frenal, and with the fifth and sixth supra-labials; of the two postoculars the superior is somewhat larger than the inferior; the anterior genials are much larger than the posterior; the neck is long and slender, the body much thicker, compressed *en toit*; scales smooth, those upon the sides lanceolate, the four or five rows upon the back larger; abdomen very angular; tail of moderate length, scales hexagonal; the two

[Oct.

middle dorsal rows larger than the others; twenty-three rows of scales upon the middle of the body, eight near the origin of the tail. Color olive in spirits, probably green during life; abdomen and under part of tail green.

Dimensions. Length of head 13 lines; breadth posteriorly 6; length of back and body 2 feet, 9 inches; of tail 12 inches, 8 lines. Total length $4\frac{1}{2}$ feet; circumference of body at middle 2 inches. Ab. scut. 236; 1 bifid præanal; 146 urostega.

Habitat. Gaspar Straits. One specimen.

Proteroglyphes—Platycerques *D. & B.*

PLATURUS FASCIATUS Latreille. One fine specimen. Black bands complete; larger considerably upon the back than abdomen; a white spot on each side of the occipitals. Aricamote of the Tahitians. Captured in Bananas Bay, Tahiti, March 19th, 1855. Presented by Mr. Adams, of Papété. Total length 2 feet, 7 inches; of tail 8 inches; circumference 2 inches, 8 lines.

PLATURUS FASCIATUS Var.

Char. Snout black; extremity of tail black; forty complete black bands upon the body; besides three incomplete upon the neck; six complete black bands upon the tail; three and a-half rows of scales in black bands upon the back, and one and a-half in the white interspace. Total length 1 foot, $9\frac{1}{2}$ inches. The largest specimen measures 3 feet, 9 inches in length and 6 inches in circumference. The tail measures $4\frac{1}{2}$ inches in length by $1\frac{1}{4}$ inches in height at its base. The coloration corresponds with that of the plate of *Hydrophis colubrina*, in the Fauna Japonica. The abdomen, chin and throat are ochraceous throughout, the bands having disappeared entirely from the belly; 23 rows of scales near the middle of the body; chin and throat covered with scales; ab. scuta. 198, of which the 4 last are bifid; 32 bifid urostega. Besides the above there are two other specimens, from Cleopatra Island, more fully grown, one completely adult, (*Hydrophis colubrina* a Schlegel's Fauna Japonica, tab. 10). The only difference which I observe between the latter and Prof. Schlegel's specimen, is that the scales in the latter do not appear to be quite so broad. The markings in the two specimens before us are quite different from those of the younger ones, in which the black and white bands are very distinct and complete, encircling the whole body; but in the one which may be nearly half grown, they are so only upon the tail and the posterior part of the body, the abdomen being of a dull, ochraceous yellow in the greater part of its extent, as well as the neck and throat, somewhat deeper brown opposite the bands; the length of this specimen is 2 feet, $9\frac{1}{2}$ inches; circumference 3 inches, 3 lines; the extremity of the tail is black; 6 complete bands upon the tail.

Two other specimens of this variety are in the collection, from Loo-Choo, younger than either of the others. In the smaller, which measures 1 foot, 2 inches in length, and 8 lines only in circumference, the black rings are of nearly equal length upon the back and abdomen, being very closely approximated in the latter position; the very tip of the tail in the smallest specimen is white. The specimen marked 243, taken by Capt. Stevens, at Cleopatra Island (north of Ousima), May, 1855.

PELAMIS Daudin.

PELAMIS BICOLOR Daudin. One specimen.

Habitat. Tahiti.

New Holland.

SAURIA.

LEPIDOSAURIAN or Scincoid Lizards.

Saurophthalmes D. & B.

LYGOSOMA Gray.

LYGOSOMA GUICHENOTI D. & B.

1860.]

Habitat. Sidney. One specimen.

LYGOSOMA TÆNIOLATUM D. & B.

Syn. *Lacerta tæniolata* Shaw, Gen. Zool. tom. 3, p. 239.

Spec. char. Eyelid scaly, two fronto-parietals; nasals in contact; fronto-nasals separate; ground color of back and upper part of tail yellowish-brown, with a longitudinal band of black along the middle line of the back, commencing at the occiput, and lost upon the tail, bordered with white; a black lateral band on each side, commencing at the nostrils, between which and the eye it is narrow, and passing along the temples and sides of the body, as far as the origin of the tail, where it is continuous with a very narrow black band extending about an inch upon the tail.

BATRACHIA.

HYLIDÆ.

HYLA CYANEA Daud. One specimen. Sidney (young). Taken Dec., 1853.

Loo-Choo.

SAURIA.

SAURIENS EUNOTES D. & B.

Sub. fam. *Iguaniens Acrodontes*.

Gen. *DIPLODERMA* nob.

Gen. char. Head pyramido-triangular, covered with polygonal carinated scales, of unequal size; nostrils lateral in a large plate near its upper border; a small nuchal crest; no external ear openings; body covered with strongly carinated scales, many of which are quite large; those upon the anterior and lateral parts of the body quite small; tail long and slender, cyclo-tetragonal at base, covered with carinated scales, not verticillate; no femoral or anal pores; body slender, compressed; extremities slender, fingers and toes 5—5; tongue slender, adherent, notched posteriorly; 40 teeth in the upper jaw; five small incisors, two canines on each side, the second more robust and slightly longer than the first; the remaining teeth tricuspid, with obtuse summits, the five first smaller than the others; 34 lower, two canines of about equal length. The teeth, with the exception of the laniaries and intermaxillaries, are all very closely in contact, inclining inward, and firmly imbedded in the jaw, and not along its border; no palatine teeth.

DIPLODERMA POLYGONATUM nob.

Description. A longitudinal row of carinated scales upon the snout behind the nostril; frontal region depressed; supraciliary ridges low, separated from each other by two rows of small scales, and communicating with the longitudinal ridge above mentioned by two or three scales on each side; supraciliary regions convex; no well marked occipital scale; seven superior labials; a nuchal, not elevated crest; no transverse gular fold; neck slightly folded; body slender, covered with carinated scales, some of which, here and there interspersed, are much larger than the others; the axilla, and that part of the body immediately within the arm and above it, covered with very small scales; this patch of small scales contrasting strongly with the larger scales upon the back and sides; chin and throat covered with strongly carinated scales; scales of abdomen triangular, strongly uncarinate, the carina extending the whole length of the scale; upper surface of arms and extremities covered with strongly carinated scales; those on the inner and anterior surface of the arm smaller than those upon the corresponding surface of the forearm; posterior extremities covered with strongly carinated scales; third

[Oct.

and fourth fingers of nearly equal length; fourth toe the longest; margins of fingers and toes serrated, the under surface protected with transverse scales; soles of feet covered with strongly carinated scales, ending in a spine; palms covered with very small scales.

Color. Uniform greenish-olive above, somewhat deeper upon the back, much lighter beneath, with a marked tinge of yellow; eight dark colored bands upon the tail.

Dimensions. Length of head 9 lines; greatest breadth 5 lines; length of body $1\frac{1}{2}$ inches; tail $5\frac{1}{2}$ inches; total length 7 inches 9 lines.

Habitat. Amakarima Island. One specimen.

Gen. remarks. *Lyriocephalus*, *Otocryptus*, *Ceratophorus*, and *Phrynocephalus* are Iguanian Acrodont saurians, with ears concealed beneath the integument; but *Diploderma* differs from each of these. *Lyriocephalus* has the snout surmounted by a rounded protuberance; the dentition of *Otocryptus* is altogether different, and in *Ceratophorus*, as its name indicates, the snout is prolonged into a sort of horn. See D. & B. tom. v. p. 433. The head of *Phrynocephalus* is nearly circular; the tail is much shorter, and the body is covered all over with minute scales, being quite a different animal in its general appearance.

OTOCRYPTIS Weig.

Among the saurians in the Loo-Choo collection is a very small Acrodont Iguanian, no doubt a young animal, which appears to belong to a genus very near if not identical with the *Otocryptus* of Weigmann. The form of the head, however, is different from that of *Otocryptus*, as described by Dumeril & Bibron, and the number of molar teeth is less, viz.:—eight instead of twelve. The specimen, small as it is, is much mutilated, and otherwise injured, but the following characters can be distinctly made out.

Gen. char. Head rounded, and high posteriorly, the anterior slope more gradual than the posterior, the front and vertex being nearly on a line; snout covered with polygonal scales; supraorbital ridges distinct; eyelids covered with carinated scales of nearly equal size; occiput covered with polygonal scales, partly smooth, partly carinate; temples covered with carinated scales; eyelids covered with small scales. The incisor teeth on each side separate, a conical canine, and eight tricuspid, the first three the smallest, the last two the largest; the same number in the lower jaw; ears concealed by the integument; body covered with scales arranged in transverse rows; five fingers without serratures, the fourth finger a little the longest, all armed with recurved nails; tail slender.

Dimensions. Length of head 4 lines; of neck and body $6\frac{1}{2}$ lines; of tail (mutilated) 10 lines; length of anterior extremities 6 lines; of posterior

Habitat. Loo-Choo. One specimen. Caught Nov. 1854, by McKnight.

Gen. remarks. But one species of *Otocryptus* is described by Dumeril & Bibron, viz.:—*O. bivittata* Weig., the habitat of which is unknown.

GECKOTIDÆ.

Lezards Geckotiens, ou Sauriens Ascalabotes D. & B.

Gen. HEMIDACTYLUS.

Sect. DACTYLOTELES D. & B.

Sub. div. A.—*Dact. fissipedes*.

HEMIDACTYLUS MARMORATUS nob.

Spec. char. Mental plate pentangular, small; behind these several series of unequal scales, larger than those upon the throat; a transverse row of plates immediately behind the mental and first infra-labials; the two middle much larger than the lateral ones; eleven supra-labials on each side; ventral 1860.]

plate pentangular, much broader than high, presenting an angle posteriorly; scales upon the muzzle and in front of the orbits, nearly equal, small; head covered with small granulations; five rows of very small circular tubercles on each side of the back above; a row of seven pores in front of the anus; color greyish, marked all over with black; abdomen white; chin and throat white, marked with brown.

Dimensions. Length of head 7 lines; greatest breadth $4\frac{1}{2}$ lines; length of head and body 1 inch 8 lines.

Habitat. Loo-Choo. One specimen.

HEMIDACTYLUS INORNATUS nob.

Spec. char. Mental plate triangular, large; but two plates immediately behind the mental, large and quadrangular; immediately behind them two others, smaller, and also more or less quadrangular; rostral plate broader than high, not presenting an acute angle posteriorly; the plates behind it rather small, with one intermediate, eleven supra-labials, the last six the smallest; but two rows of circular tubercles on either side of the median line; no tubercles upon the head; scales small, and for the most part equal; color uniform drab above, with a few dark colored maculations; under parts white.

Dimensions. Length of head six lines; greatest breadth four lines; length of body 1 inch 3 lines; of tail

Habitat. Loo-Choo. One specimen. Caught in a shed, Nov. 1854, (W. S.)

Gen. remarks. This species is readily distinguished from the preceding by the different shape and size of the mental plate, and arrangement of the scales posterior to it, and the presence of pores in front of the anus.

SCINCIDÆ.

PLESTIODON D. & B.

PLESTIODON MARGINATUS nob.

Spec. char. Rostral plate comparatively high; internasal presenting an obtuse and rounded angle posteriorly; fronto-nasal not in contact, being separated by a considerable interval; frontal plate heptagonal, more or less truncate anteriorly; seven superior labials; olive colored above, with a tinge of red upon the head, and a broad, brickdust colored stripe, commencing upon the temples, and extending along the sides of the neck, and the body, as far as the root of the tail; under parts silvery white. Twenty-five rows of scales; five in front of the tail.

Dimensions. Length of head $11\frac{1}{2}$ lines; greatest breadth 8 lines; length of body 2 inches 8 lines; of tail 2 inches 9 lines; of anterior extremities 11 lines; of posterior 15 lines.

Habitat. Ousima, Japan, and Loo-Choo Islands.

Gen. remarks. The specimen from Loo-Choo is much smaller, and evidently the young of the same species. The lateral stripe of brown is bordered with obscure white, and there is a vitta of the same color running along the middle of the back. This species, with the exception of the lateral band bears a striking resemblance to *Plestiodon laticeps* of the Southern U. S., but the red upon the head is not near so deep, and the shape of the rostral and frontal plates is quite different, and the fronto-nasals are closely in contact. The smaller specimen, caught April, 1855, by Mr. Stimpson. The larger, May, of the same year.

OPHIDIA.

CROTALIANS.

BOTHROPS FLAVOVIRIDIS nob.

Description. The head is large, triangular in shape, covered above and below with smooth scales, in this respect differing from typical *Bothrops*, in which

[Oct.

the scales upon the top of the head are carinate: eight superior labials; third and fourth the largest; seven temporals; the two anterior, of which the superior is the larger, separated from the orbit by a row of small scales; the plates over the eyes are of moderate size, single; the rostral plate is broader than high; the head is much larger posteriorly than in front, where it is somewhat truncate; neck much contracted; body rather slender, presenting near the middle twenty-seven rows of lanceolate carinate scales, the carinæ extending the whole length of the scale, and the rows running very obliquely; besides these carinated scales there are two other inferior rows, running very obliquely, which are smooth, the total number of rows of scales being thirty-one; the scales upon the tail are much broader than those upon the back; the ground color of the head above is ochraceous yellow, presenting numerous dark colored lines, probably green during life; a narrow vitta of the same color extends from behind the eye to the posterior and external angle of the head, a short distance above the commissure of the jaw; a bar, broader than the rest, is seen on each side of the inner aspect of the occiput, bending inward, and extending for a space of two and a half inches along the side of the neck; the jaws and throat are yellow (straw colored), as well as the abdomen; the under part of the tail is also yellow, but presents a number of bluish colored maculæ on each side; the ground color of the body above is dirty yellow, with longitudinal dark colored interrupted bars on each side of the median line, with intervening spaces of yellow; upon the tail the dark colored portions present the form of double triangles, united at their bases, upon the median line, with a subround yellow spot in the centre, and having upon their sides triangular interspaces of yellow; eighty-one urostega; ab. scuta sixty-one. The specimen being much mutilated, it is difficult to ascertain with precision its total length.

Habitat. Amakarima Island (one of the Loo-Choo group.)

PROTEROGLYPHES.

PLATURUS FASCIATUS.

One specimen, young, captured at Nara, Loo-choo, June, 1853, by W. Heine.

AGLYPHODONTES.

Gen. EURYPHOLIS nob.

Char. Scales and plates of the head polished, the plates of the head especially; eyes lateral, projecting; pupil round; body slender; tail short, with bifid scutella; nine plates upon the top of the head; the internasal small; the prefrontals large, the frontal larger than broad, pentagonal; nostril between two plates; a rather narrow frenal; one preocular; two postoculars; eight supra-labials; the eye resting on the fourth and fifth; scales hexagonal, semi-carinate upon the back.

EURYPHOLIS SEMICARINATUS nob.

Spec. char. Uniform green above, white beneath; total length 1 foot $7\frac{3}{4}$ inches; of tail 4 inches 5 lines; 189 sb. scut.; 1 bifid præ-anal; 77 sub. caud.

Description. This serpent has very much the general appearance of a *Leptophis*, but the tail is shorter; the scales upon the back are strictly hexagonal, those upon the sides have their posterior margins somewhat rounded; the three inferior rows on each side are smooth; of the plates upon the head, the posterior nasal is larger than the anterior; the frenal longer than high, resting upon the supralabials; the superior postocular larger than the inferior; three temporal plates; one in front immediately behind the postoculars and between the seventh supralabial and the occipitals, the other two, one above and the other behind these, between the occipital and the eighth supralabial plate; the frontal presents an acute angle posteriorly; the occipitals, of moderate size, pentangular; the neck is of nearly the same

thickness as the posterior part of the head ; the scales upon the tail, with the exception of the inferior row on each side, which is smooth, are also semicarinate ; fifteen rows of scales upon the middle of the body ; sixteen upon the neck (scales more narrow) ; eight at the origin of the tail.

Dimensions. Length of head 6 lines ; breadth 4 lines ; circumference of body at middle 14 lines.

Habitat. Loo-Choo. Caught by Mr. Wright, near Napa, Nov. 1854. Two specimens. Another from Japan.

In the collection are no turtles from the Loo-Choo Islands.

BATRACHIA.

Urodela.

Fam. ATRETODERES.

Gen. TRITON Laurenti.

TRITON SUBCRISTATUS Schlegel.

Syn. Salam. subcristata Schlegel, Fauna Japonica, p. 123, pl. iv. fig. 3.

Cynops subcristatus Tschudi, Class. der Batrachier, p. 94, pl. 2.

Cynops pyrrogaster Gray, Cat. Brit. Mus. p. 25, No. 1.

Spec. char. Head flattened ; skin granular ; back above, in some specimens, presenting scattered yellow spots upon the back and sides ; abdomen orange, with numerous black spots, resembling those of *Triton cristatus* ; chin and throat orange ; black spotted ; under part of tail orange ; tail long, much compressed.

Dimensions. Length of head six lines ; greatest breadth 6 lines ; length of neck and body 1 inch 9 lines ; of tail 2 inches $8\frac{1}{2}$ lines ; total length 4 inches $11\frac{1}{2}$ lines.

Habitat. Specimens marked No. 5, found in the Paddyfields at the Amakarima Isle, Loo-Choo, April, 1855, by Mr. Squires and Mr. Macomb. Other specimens, marked 53 in the Catalogue, from Ralousima. Those from this place, the northern half of Ousima proper, are yellow beneath, without the large black spots upon the abdomen.

Gen. remarks. This species resembles much *Triton cristatus* of Europe, but wants the white, minute points upon the sides and chin, and the tail is much longer. According to Prof. Schlegel, the osteology of the head is also different, and the number of vertebræ less, there being sixteen in *Triton cristatus*, and but fourteen in the present species. We have compared these specimens with one from Japan, due to the generosity of the Administration of the Garden of Plants, and find no difference except that the black spots upon the abdomen are not so numerous in the Japanese specimen, and the tail is shorter and less compressed at its root. The coloration above, in the Japanese specimen, is brown ; in those from Amakarima Island, a deep black. We had proposed for this dark colored Triton, with its narrow and much compressed tail, the name *ensicauda*, but, without a greater number of specimens for comparison, we are unwilling, at present, to consider it a distinct species.

Anoura.

HYLIDÆ.

HYLA CYANEA Daudin (young). One specimen.

RANIDÆ.

RANA RUGOSA (young). Two specimens. Taken at Loo-Choo, April, 1855, by Mr. Stimpson.

[Oct.

Japan.

No turtles were collected at Japan, and it is to be regretted that we have no specimen of the *Megalobatrachus* among the Batrachians. For a fine figure of the latter, see the *Fauna Japonica*, and for the plates of *Trionyx* and *Emys*, the *Abbildungen* of Prof. Schlegel.

SAURIANS.

AUTOSAURIANS.

Sub. Fam. *Autosaures calodontes* D. & B.

LEIODACTYLES.

Gen. *TACHYDROMUS* Daud.

TACHYDROMUS SEXLINEATUS D. & B. Five specimens.

The ground color of four of these specimens above, is uniform brown, interspersed with small black spots; in the remaining one, green, the superior lateral vitta bordered inferiorly with black. During life, dark coppery brown; below white, like white lead. W. S.

Habitat. Simoda, Japan, Island of Nippon, May, 1855. Common among grass in lowlands. W. S.

TACHYDROMUS JAPONICUS D. & B. Three specimens.

Erpet. Gen. tom. v. p. 161.

Habitat. Ousima, Japan. Caught May, 1855, by Mr. Stimpson.

SCINCIDÆ.

PLESTIODON D. & B.

There is, in the collection of Com. Rodgers, but one specimen of five-lined *Plestiodon*, which, both by Prof. Schlegel and Dumeril & Bibron, have been considered identical with the *Plestiodon quinquelineatus* of the U. S. Prof. Schlegel states that he had before him two complete suites of the North American and Japanese species, composed each of thirty individuals of all ages, the one collected at Japan, by MM. de Siebold and Bürger, the other by Prof. Trout, upon the banks of the Tennessee river. The examination of this large number of specimens proved to him that there existed not the slightest difference between these individuals, brought from points of the globe so distant the one from the other, although situated under nearly the same parallel. (*Fauna Japonica*, *Reptilia*, p. 99.)

Dumeril & Bibron say, that having examined two of the Japanese specimens, the North American species exists also in Japan. (*Erpet. Gen. tom. v. p. 710.*) The most striking difference that we observe in the single specimen before us, consists in the presence in the one from Japan, of a plate above the anterior frenal, which is wanting in all the others; this doubling may be, and probably is, an accident, and an abnormal division of the anterior frontal plate. There are, also, but twenty-four rows of scales in the Japanese specimen. The coloration of the specimens from these different localities is very much alike, except that the vertebral line does not bifurcate upon the head in that from Japan. The fronto-nasals are not in contact, but in some of the North American specimens this is the case, in others not. We have always doubted, notwithstanding the high authority of the authors quoted, the absolute identity of species so remote. Since the above was written, another specimen has been placed in our hands, in which there is no naso-frenal, only two frenals, an anterior and a posterior, and there is a difference in the number of rows of scales, there being twenty-seven in the Japanese, and thirty-two in the North American. In a specimen from South Carolina, presented by Dr. Blanding to the Academy, there are thirty-two rows; in one from the Loo-Choo Islands, by Dr. Joseph 1860.]

Wilson, U. S. N., but twenty-four. The scales upon the back, in the Loo-Choo specimen, are broader than those in the one from South Carolina. The fronto-nasal and fronto-parietal much smaller in the Loo-Choo specimen, the former less than half the size; in the latter the frenal is more high and narrow; in the one from South Carolina, there is a naso-frenal, a plate which does not exist in the specimen from Loo-choo. In the large North American specimens in the Green collection, we count twenty-nine and thirty rows of scales: both these have a naso-frenal in front of the anterior frenal. In a specimen from Arkansas, presented by Mr. Piteher, we find twenty-nine rows of scales, and no naso-frenal, a near approach to the Japan; but the scales upon the back are evidently less broad. In another specimen from South Carolina, presented by Prof. Leidy, we find thirty-two rows, with a naso-frenal; scales of the back high. In another from South Carolina, presented by Mr. Reid, we find twenty-nine and thirty rows. In the specimen from Japan, which is young, the ground color between the stripes is jet black; in those from Loo-Choo, which are more mature, the color above is olive, with a dark colored lateral band on each side, between the lateral stripe; the most constant difference determined by the above comparisons, therefore, would appear to be the less number of rows of scales in the Japanese, the greater breadth of the dorsal rows, and the absence of the naso-frenal plate. We have had, however, but three Asiatic specimens for observation, but would suggest whether they be not really distinct species from the North American, although resembling each other so much in color; and in case future observation should decide this to be the case, would propose for the Japanese species the name *PLESTIODON LATISCUTATUS*.

Gen. *LYGOSAURUS* nob.

Char. Nostril in a single plate; neither supero-nasal, nor naso-frenal; two fronto-nasals; an interparieto-fronto parietal; two parietals; a first and second frenal; two freno-orbitars; six superior labials; body covered with hexagonal scales, tricarinate upon the back; fingers and toes 5—5; the two inner and outer ones quite short; tail cyclo-tetragonal at base, longer than head, neck and body.

LYGOSAURUS PELLOPLEURUS nob.

Spec. char. Light brown above, with four longitudinal rows of minute black spots, extending a considerable distance upon the tail; a lateral dark-colored band on each side, commencing behind the eye and extending the whole length of the back and body, being lost upon the tail; abdomen and under part of extremities white; the scales upon the under part of the tail spotted with black. Total length 3 inches, 7 lines; tail 2 inches.

Description. The size of this delicate-looking little Lepidosaurian is about the same as that of *Lygosoma laterale*; the head is small, the snout rather pointed, the supra-orbital regions somewhat prominent; the internasal is broader than long; the fronto-nasal single, truncate posteriorly, presenting three facets in front, the middle one broad; frontal truncate anteriorly, the edges bevelled, angular posteriorly; the fronto-parietals and parietals present nothing remarkable, but the interparietal, instead of being placed exclusively between the parietals, lies also and for the greater part of its extent between the fronto-parietals; it is narrow in front, broad behind; the inferior eyelid is protected by two rows of scales, the inferior row quite large, beneath which, and above the supero-labials, there are two interrupted rows of triangular scales; four supra-orbital scales; auricular openings pyriform in shape, with no scales upon their borders; scales hexagonal, those upon the abdomen and sides smooth, those upon the back tricarinate; 24 rows of scales, six in front of the arms and of nearly equal size; extremities slender, each provided with

[Oct.

a nail, the third finger the longest, the first very short, almost rudimentary, the second and fifth of nearly equal length; the first two quite short, the fourth the longest; fingers and toes not denticulated upon the edges, the inferior surface covered with transverse scales. Color and dimensions as above.

Habitat. Ousima, Japan. Two specimens,—one from Loo-Choo.

Gen. remarks. Although the two animals resemble each other so much in their general form, the arrangement of the plates upon the head is quite different. In *Lygosoma laterale* the scales are quite smooth.

OPHIDIA.

Fam. TYPHLOPIDÆ.

OPHTHALMIDIUM D. & B.

Char. A narrow rostral, bent upon the snout; a supra-ocular; a pair of preoculars; a pair of nasals; a pair of oculars, with the eye distinct at the upper part; a pair of fronto-nasals; a pair of post-oculars; an anterior frontal; a frontal; a pair of parietals; an interparietal; eyes latero-superior; body covered with smooth hexagonal scales; tail very short.

OPHTHALMIDIUM TENUE nob.

Spec. char. Color uniformly brown above, lighter below; 10 rows of subcaudal scales; 282 horizontal rows, 20 longitudinal rows, 4 pair of supralabials; nostrils very small, in the suture between the nasal and fronto-nasal plates, beneath the extremity of the snout.

Dimensions. Length of tail $1\frac{1}{2}$ lines; of head and body 5 inches. Total length 5 inches, $\frac{1}{2}$ line.

Habitat. Hong-Kong, China. Three specimens.

Fam. AGLYPHODONTES D. & B.

Gen. ELAPHIS Aldrovandi.

Char. Nostrils between two plates; a frenal; two antoculars, the inferior small, intercalated between the third and fourth supra-labials; the one resting on the fourth and fifth; two internasals, smaller than the prefrontals: a frontal longer than broad; three temporals on each side; scales elongated, lanceolate, weakly keeled; tail of moderate length, scutes bifid.

ELAPHIS BILINEATUS nob.

Spec. char. Nine rows of scales, the dorsal ones carinate; color black, as in *Coryphodon constrictor*, but with two white lines on each side of the neck, extending some distance along the body. Total length 3 feet, 4 inches.

Description. This species, in its general conformation, has a marked resemblance to *Coryphodon constrictor* (Bascanion B. & G.), the pupil is round, the supraciliaries projecting very slightly, the superior antocular much excavated; of the supralabials the sixth and seventh are the largest; the frenal is not elongated, but rhomboidal, with its posterior and inferior angle prolonged; of the two anterior temporal plates the superior is the more narrow and smaller; the frontal plate is pentangular, less excavated laterally than in *Coryphodon constrictor*; the three inferior rows on each side are carinated, the carinæ not extending the whole length of the scale; the præanal scute is bifid; abdomen angular; posterior teeth longer than the anterior. Ab. scut. 193; subcaud. 1 bifid præanal; 76 subcaud.

Habitat. Volcano Bay, Jesso. One specimen, caught by Dr. Morrow, May 30th, 1854.

Gen. LEPTOPHIDIUM nob.

Char. A rostral, two internasals much smaller than the prefrontals; frontal longer than broad, presenting an acute angle posteriorly; occipitals large; 1860.]

nostril between two plates, a frenal; two antoculars, and two postocular plates; eye margined inferiorly by the fourth and fifth supralabials; scales quadrangular smooth; a double præanal plate; tail short with bifid scutes; eye rather large, pupil ovoid.

LEPTOPHIDIUM DORSALE nob.

Spec. char. Nineteen rows of smooth scales; eight superior labials; the fifth in contact with the inferior postocular; an oblique brownish band behind the eye; another on each side of the head, passing across the temples; inferior and superior labials, rostral and internasals with dark-colored maculations; a transverse bar across the prefrontals posteriorly; two longitudinal brownish stripes upon the neck, commencing at the occipitals; a series of transverse light brown fasciæ upon the anterior third of the dorsum, about 12 in number, bordered with light yellow; fawn color above, white below, with a tinge of green. Ab. scut. 100; 1 bifid præanal; 85 subcaud.

Dimensions. Length of head 6 lines; greatest breadth 3; length of body $8\frac{1}{2}$ inches; of tail 2 inches, 3 lines. Total length 11 inches, 3 lines.

Habitat. Hakodadi, Japan. One specimen, taken on a hill-side, near Hakodadi, Island of Jesso, June, 1855, by W. Stimpson.

LEPIDOCEPHALUS nob.

Gen. char. Head rather short and broad behind triangular; temples swollen; two internasals, two prefrontals, larger than the internasals; a frontal, as in *Coronella*; nostril between two plates; a narrow frenal; a preocular; two postoculars; the eye resting on the fourth and fifth supralabials, four or five lines from the extremity of the snout; posterior superior maxillary teeth much longer than the others; scales upon the back quadrangular, with rounded posterior margins, semicarinate; tail of moderate length, with bifid scutes.

LEPIDOCEPHALUS FASCIATUS nob.

Spec. char. Eight supralabials; 17 rows of scales, the four inferior rows smooth; a series of thirty-five dark-colored bands upon the body; nine upon the tail; tip of tail black; 216 ab. scut.; a single præanal; 65 subcaud.; length 3 feet.

Description. General appearance that of *Coronella*; the pupil is round; there are seven temporal plates; of the superior labials the posterior and superior angle of the third is prolonged so as to touch the eye in front, occupying the position of an inferior preocular; the sixth and seventh supralabials are the largest; the neck anteriorly is of nearly the same thickness as the head; the body moderately robust, the abdomen angular; the tail rather slender, not pointed at the tip; throat and abdomen white; a series of black longitudinal blotches upon the under surface of the tail at its middle; superior labials margined with black; a black quadrangular blotch behind the eye; upper part of head black, intermingled with yellow spots; a narrow transverse band upon the neck with an anterior prolongation; the interspaces between the black bands upon the back white or yellowish.

Dimensions. Length of head 1 inch; greatest breadth $7\frac{1}{2}$ lines; length of body 2 feet, $7\frac{1}{4}$ inches.

Habitat. Japan and Loo-Choo. Two specimens from each locality. Those from Loo-Choo captured by Mr. Heine.

Gen. PROTERODON nob.

Char. The anterior teeth longer than the posterior, with a marked interval between the first, second, third and fourth of the upper jaw; two internasals; two prefrontals; a frontal, as in *Coronella*; a frenal; one antocular; two postoculars; four temporals; the superior of the two anterior quite small and

[Oct.

narrow-pointed behind; eye resting on the fourth and fifth supralabial; scales quadrangular; those of the back slightly carinate; præanal scute bifid; tail rather short, with bifid scutes.

PROTERODON TESSELLATUS nob.

Spec. char. Twenty-one rows of scales; three or four rows on each side smooth; the others, with a slight carina, extending half-way along the middle; olive-colored above; throat yellow, black spotted; abdomen orange, tessellated with black; length 3 feet.

Description. The head is rather long, flattened behind, pupil round, the supraciliary not projecting over the eye; the frenal is quite small; of the two postoculars the superior is the larger; the temporal plate immediately behind them is remarkable for its form; it is quite narrow and somewhat lanceolate in shape; of the two posterior temporals the upper is much longer than the inferior; there are eight supralabials, though this is somewhat doubtful from the diseased condition of the three anterior ones, the seventh being the largest; the scales posterior to the occipitals (about a dozen rows) are quite smooth; the neck is narrower than the head; the body moderately stout; the tail rounded above and upon the sides, flattened beneath, tapering to a point. Ab. scut. 211; subcaud. 73; a double præanal plate.

AMPHIESMA TIGRINUM D. & B., Erp. Gen. t. vii. p. 732.

Tropidonotus tigrinus Schlegel, Fauna Japonica, p. 86. Two specimens caught at Nippon, Japan, May, 1855, by Mr. Stimpson. Ab. scut. 162; 1 bifid præanal; subcaud. 175.

Gen. remarks. This is evidently the *Tropidonotus tigrinus* of Prof. Schlegel, whose remarks in regard to the differences between the one under consideration and the *Tropidonotus natrix* of European authors, are perfectly correct. *Trop. tigrinus* has a great resemblance to the *Trop. hydrus* of Fitzinger, of which we have eight specimens in the Bonap. Coll., the markings and the number of rows of scales are the same in both; but the shape of the head is very different. That of *tigrinus* is broad, and the snout is rounded, but in *hydrus* it is more acute. The two serpents in fact belong to different genera.

BATRACHIANS.

RANIDÆ.

RANA RUGOSA Schlegel. Fauna Japonica, p. 160, tab. 3, fig. 3 and 4, D. & B., Erpet. Generale, tom. viii. p. 368.

Four specimens of small size, presenting the conical pustulations upon the longitudinal elevations upon the back described by Dumeril & Bibron, three other specimens from Ousima, and two from Simoda, of the size of *Rana halecina*, with vocal vesicles very distinct. The specimens from Ousima, and two larger ones from Simoda, are perfectly white beneath. Taken in the Paddy fields at the island of Ousima, May, 1855, W. S. Cream colored and greenish mottled. The large specimens from Simoda, Island of Nippon, were found in the Paddy fields back of the town, May, 1855. This species has bladders, one on each side of the neck behind the jaws, which swell in globes one-half an inch in diameter; and when the croaking noise is made, they as rapidly fall flat against the neck. Above dark greyish, with darker brown spots on the hinder legs; sides yellowish brown; belly white; fore legs inclining to flesh color; back sometimes streaked with black, as in our Pickerel frog. Other specimens much smaller, marked 13 in the catalogue, were found along the shores of mountain streams, at Simoda, Japan, May, 1855. Above very dark brown, irregularly and distantly punctate with black. Below pale greyish, mottled with white. Another specimen of *rugosa* by Dr. Morrow from Simoda.

1860.]

RANA MARMORATA nob.

Two specimens of a frog, the coloration of which, though the animal is not so large, corresponds with the figure of *Rana esculenta*, as given in the Fauna Japonica. It differs, however, very considerably from the numerous specimens of *Rana esculenta* in the Bonap. collection of the Academy. The spots upon the back are not so regular and well defined as in *esculenta*, and there exist on each side of the ventral line four or five longitudinal elevations, resembling somewhat those of *rugosa*. The sides are marbled with black, and there is a black band extending from the front of the eye to the tip of the snout; extremities black spotted; thighs posteriorly marbled with black; under parts white. Length 1 inch 9 lines; of anterior extremities 1 inch; of posterior 2 inches, 10 lines.

Habitat. Simoda. Five specimens obtained by Dr. Morrow.

A small specimen of a Rana not figured in Schlegel, perhaps the young of a large species is.

RANA NIGROMACULATA nob.

Spec. char. Vomerine teeth in two patches between the internal nares; olive colored, with numerous black spots upon the back, of considerable size, but varying in this respect; a black band extending from the eye to the snout on each side; legs and tarsi banded with black, thighs mottled posteriorly with blotches of the same color; under parts white; web of the toes extending as far as the base of the antepenultimate phalanx, except in the third, in which it reaches to the base of the proximal extremity of the third phalanx.

Dimensions. Length of head and body 1 inch; of anterior extremities $\frac{1}{2}$ an inch; of posterior $1\frac{1}{4}$ inches.

Habitat. Japan. One specimen discovered by Dr. Morrow.

In the collection of reptiles from Japan, by Dr. Morrow, is one specimen of a Rana figured in Schlegel, considered by Prof. S. as identical with the *Rana temporaria* of Europe. This species, however, has even a stronger resemblance to the *RANA SYLVATICA* of the United States, with which it appears to be identical, and from which, indeed, I do not find any marked points of difference. The large blotch behind the ear, and the longitudinal black mark upon the arm exist, in all these specimens, and the longitudinal ridge on each side of the body. Length of head and body 1 inch 11 lines; of thigh 1 inch 2 lines; of leg 1 inch 2 lines; of tarsus 7 lines; of foot to extremity of longest toe 1 inch; of arm 5 lines; of forearm 5 lines; of hand to extremity of longest finger 5 lines. Found in the Paddy fields back of Simoda, Island of Nippon, Japan, May, 1855. This species has no cheek bladder. (Notes of Mr. Stimpson.)

HYLIDÆ.

HYLA VIRIDIS? Laurenti.

Syn. *Hyla arborea* Schlegel, Fauna Japonica, p. 112, pl. 3, fig. 526.

Habitat. Simoda, Japan; found in the mud in the Paddy fields back of Simoda, Island of Nippon, May, 1855. The color during life, according to Mr. Stimpson, is bright light green above. A golden band along each side of the head, including the eye; sides minutely sprinkled with copper color; belly white; puffs at the throat. Five specimens.

Gen. remarks. We can find no marked difference of structure between this animal and the *Hyla viridis* of Laurenti, but no mention is made in the description of the former of the golden band along each side of the head.

POLYPEDATES VIRIDIS nob.

Char. Head large; snout truncate; eyes large; nostrils small, two lines
[Oct.

apart; canthus rostralis slightly excavated; the ridge between the snout and the eye separating this region from the upper part of the head, presenting a slight convexity inward: tongue cordiform, notched posteriorly, eustachian foramina more oval in shape than the posterior nares; vomerine teeth in two transverse rows, on a line with the anterior margins of the posterior nares, inclining backward toward each other, separated by an interval of more than half a line; skin smooth above, of a cærulean color in alcohol; the posterior part of thighs, legs and tarsi whitish; under parts white, the abdomen very much granulated; fingers and toes semipalmate; a series of dark colored spots upon the flanks.

Dimensions.—Length of head and body 1 inch 4 lines; breadth of head $6\frac{1}{2}$ lines; of arm 4 lines; of forearm $3\frac{1}{2}$ lines; of hand to extremity of longest finger 5 lines; of thigh 8 lines; of leg 8 lines; of foot to extremity of longest toe 6 lines.

Habitat. Loo-Choo. Taken at Loo-Choo, December, 1854, by Mr. Wright. Color during life pale green above, below pale red; no dark line of separation between these colors. (Notes of Mr. Stimpson.)

Gen. remarks. This species evidently belongs to the same genus as *Polypedates megacephalus*, found at Hong Kong, and remarkable for the two patches of rugosities upon the vertex; the animal, however, is quite different from the *Polypedates rugosus* of Ceylon and the Philippines.

POLYPEDATES BURGERII D. & B.

Erpet. Generale, tom. viii. p. 521.

Syn. *Hyla Burgerii* Schlegel, Fauna Japonica, p. 113, pl. 3, fig. 728. Ousima, Japan. A small specimen from the Loo-Choo islands.

IXALUS TSCH.

IXALUS JAPONICUS nob.

Char. Head of moderate size; nostrils small, lateral, $\frac{1}{4}$ line apart; body rather slender, much more so than in *Hyla versicolor*; posterior extremities quite long, webs reaching to the antepenultimate phalanx; color ash grey above, in some specimens very pale; a transverse blotch upon the head, with a posterior triangular prolongation; several other blotches upon the back, one presenting the form of the two halves of the letter X, separated by a horizontal line. In one of the specimens the transverse bar is wanting: a brownish spot in front of the shoulder; a narrow oblique band behind the tympanum; lower lip spotted with black; upper lip also, but the spots are broader and more oblique; an oblique fold above the tympanum, commencing behind the eye; tympanum distinct, of a brownish color; upper part of head and anterior part of body presenting a number of tubercles; canthus rostralis concave; ridge between the eye and the nostril presenting a convexity inward; snout rounded, and somewhat acute; abdomen and under part of thighs posteriorly granulated.

Habitat. Japan.

Gen. remarks. This species corresponds very nearly with the description of *Ixalus semifasciatus* D. & B., in tom. viii. p. 523 of the *Erpetologie Generale*. It is there mentioned, however, that the palmation of the toes does not extend beyond one-half of their length. In the Japan specimens it would appear to be larger. In Schlegel's figure, which represents a much smaller animal, there are no webs to the toes. *Ixalus semifasciatus* is an inhabitant of Java. Future observation must determine whether the two animals be identical or not.

China.

There are in the collection no Chelonians from China, and but three Saurians, 1860.]

viz., a Geckotian, an Agamian, and a Scink. Except a few serpents, all the other specimens are Batrachians, which appear to abound in that region of the globe.

SAURIA.

GECKOTIDÆ.

HEMIDACTYLUS Cuv.

Sect. DACTYLOTELES D. & B.

Subdiv. A.—*Dactyloteles fissipedes* D. & B.

HEMIDACTYLUS PUMILUS nob.

Char. Supraorbital regions not remarkably prominent; frontal region covered with granulations, larger than those upon the vertex and occiput; granulations upon body uniform or nearly so; ventral plate with fine facets, a little broader than long; in contact with the ventral are two plates, the first in contact with the first supralabial, the second with the second, the anterior larger than the posterior, and pentangular in shape; eleven supralabials; eight inferior labials; no pores in front of arms or along the thighs; color greyish; thighs with yellow above, the latter color predominating upon the head, with numerous dark colored transverse marmorations upon the back; under parts white.

Dimensions. Length of head 6 lines; breadth $3\frac{1}{2}$ lines; length of neck and body $1\frac{1}{2}$ inches; of tail 1 inch $4\frac{1}{2}$ lines.

Habitat. Hong Kong. One specimen.

LEZARDS IGUANIENS ou Sauriens Eunotes D. & B.

Gen. CALOTES Kaup.

CALOTES VERSICOLOR D. & B. Two specimens. Cum-Sing-Moon, China. Dr. Morrow.

LEZARDS SCINCOIDIENS ou Sauriens Lepidosaures.

Saurophthalmes D. & B.

EUMECES QUADRIVIRGATUS nob.

Spec. char. Supra-nasals but little extended at their external margin; neither slender nor much developed; internasal remarkable for its great breadth compared with its length, measuring $1\frac{1}{2}$ lines transversely, and about $\frac{1}{2}$ a line longitudinally; fronto-nasals in contact, their internal margins truncate; frontal hexagonal; the anterior and posterior angles obtuse, somewhat broader in front than behind; two fronto-parietals in contact, each with five distinct facets; interparietal short and broad; seven superior labials; a freno-nasal, a first and second frenal, the second much larger than the first; two freno-orbital plates, each of moderate size; twenty rows of small, hexagonal scales; body slender; tail cyclo-tetragonal at base, compressed toward the tip; color jet black above, with four longitudinal, narrow, white or yellow colored vittæ, broader and bluish upon the tail; the two middle ones commence each at the snout, pass over the eye, and extend on each side of the neck and back, and are lost upon the middle third of the tail, at its extremity; the inferior one commences at the armpit and terminates at the groin; under parts white, with a tinge of blue upon the abdomen.

Dimensions. Length of head 6 lines; greatest breadth 4 lines; length of neck and body 1 inch 11 lines; of tail 3 inches $5\frac{1}{2}$ lines; of anterior extremities $8\frac{1}{2}$ lines; of posterior extremities 11 lines. Total length 5 inches, 10 lines.

Habitat. Hong Kong Island, China. Near the summit of the mountain. Caught May 4th, 1854, by Mr. Wright.

[Oct.

OPHIDIA.

AGLYPHODONTES.

HERPETODRYAS Boie.

HERPETODRYAS CHLORIS nob.

Spec. char. Internasals very much smaller than prefrontals, rostral plate pentagonal, the other plates upon the head presenting nothing remarkable; eight superior labials, the eye resting on the fourth and fifth; anterior genaeals much longer and broader than the posterior; fifteen rows of smooth scales upon the middle of the body; tail rather long; a double row of bifid præanal scutes; 161 ab. scut, 56 subcaud. Color uniform green above, white below.

Dimensions Length of head 8 lines; greatest breadth 4 lines; length of body 1 foot 7 inches; of tail 8 inches 5 lines.

Habitat. Hong Kong Island. Caught May, 1854, by Mr. Brooke.

LEPTOPHIS Bell.

LEPTOPHIS TRIFRENATUS nob.

Spec. char. Body very long and somewhat slender; seventeen rows near the middle, the three median ones carinated; color olive above, barred with black posteriorly; under parts yellow, black spotted upon throat; posterior margin of scale at posterior part of body margined with black; ab. scut. 187, subcaud. 110. Total length 5 feet. (Fr.)

Description. The plates upon the upper part of the head present nothing remarkable; the nostril is deeply excavated between the plates; there are three frenals, the one immediately behind the post-nasal five-sided, nearly quadrangular in shape, the two behind it smaller and resembling it; there are two post-oculars, and eight superior labials, the eye resting on the fourth and fifth; the scales upon the sides of the body are smooth and quadrangular, those upon the middle of the back carinated. Coloration: The general tinge above is olive, the posterior part of the body being barred irregularly with black; tail olive colored above, barred transversely at its root with black, and maculated with black toward its posterior extremities; posterior border of the labial plates margined with black; middle portion of abdomen maculated with black; posterior part distinctly margined to a greater or less extent with black posteriorly; under part of tail yellow; the posterior margin of scutes black.

Dimensions. Length of head $1\frac{1}{2}$ inches; greatest breadth 11 lines; length of body 3 feet $7\frac{3}{4}$ inches; of tail 1 foot $2\frac{1}{2}$ inches.

Habitat. Hong Kong, China. Caught on the island of that name, April, 1854, by Lieut. Brooke.

AMPHIESMA D. & B.

AMPHIESMA STOLATUM. One specimen caught on a hill at Whampoa, China, July, 1851.

AMPHIESMA FLAVIPUNCTATUM nob.

Char. Head small, eyes somewhat prominent, internasals small and triangular, prefrontals of moderate size, pentagonal; three or four post-oculars; eight supralabials, the eye resting on the third and fourth; a small plate intercalated between the second and third; seventeen rows of lanceolate scales, near the middle of the body, the two inferior rows smooth. Color dusky yellow, with numerous yellow spots along the margin of the scales, a black undulating band running transversely behind the occiput, and two oblique ones upon the side of the head, the one commencing at the inferior margin of the eye, passing over the inferior post-ocular, and extending between the fifth and sixth supra labial to the inferior margin of the jaw; another commencing behind the post-orbital, and extending obliquely across the temples, and terminating at the 1860.]

inferior and posterior margin of the seventh supralabial plate ; under parts yellow, the posterior margin of each scute bordered with black—128 ab. scut. 1 bifid prænal ; 78 urostega.

Dimensions. Length of head 9 lines ; greatest breadth $5\frac{1}{2}$; length of body 1 foot $2\frac{1}{4}$ inches ; of tail 6 inches, 8 lines. Total length 1 foot, 9 inches, 8 lines.

Habitat. Island of Hong Kong, May, 1854, by Mr. Brooke. The specimen of the expedition having been somewhat injured, the above description was taken from a larger specimen in the collection of the Academy, which is stated to have been captured in Canton River.

OPISTHOGLYPHES D. & B.

PLATYRHINIENS.

HOMALOPSIS Kuhl.

? *HOMALOPSIS BUCCATUS* Fitzinger. D. & B., tom. vii., p. 968. One specimen, caught on the Island of Hong Kong, May, 1854, by Mr. Brooke.

PROTEROGLYPHES.

NAJA HAJI. One specimen, caught among stones on the shore of Hong Kong Harbor, May, 1854.

BATRACHIA.

RANIDÆ.

RANA TIGRINA Daud.

Syn. Rana rugulosa Weig., Nov. Act., tom. xvii., p. 258, tab. 21, fig. 2.

Rana tigrina Daud. Hist. Nat. des Grenouilles des Rainettes et des Cra-

pauds, p. 864, pl. xx.

Rana limnocharis Boie., MS.

Rana Cancrivora D.

Rana vittigera Weig., Nov. Act., vol. xviii, tab. 21, fig. 1.

Rana mugiens Daud., pl. xvii.

Rana brama Lesson, Belanger, Voy. aux Indes Orientales, pl. vi.

Spec. char. General appearance very much like that of *Rana rugosa*, Schlegel, but it wants the vocal vesicles, and the longitudinal folds on either side of the back ; head large, rather narrow in front ; an oblique fold extending from the eye to the shoulder, with small vomerine teeth in two large patches situated very obliquely ; tongue long, bifid posteriorly ; tympanum very distinct ; extremities robust ; a longitudinal glandular band running across the frenal region, which is excavated, and passing under the eye ; an oblique fold extending from the eye to near the shoulder ; color dark brown above, dark spotted, with numerous elevated longitudinal ridges upon the back, placed irregularly ; upper jaw spotted with black ; thighs marbled posteriorly with black, upon a yellow ground ; legs tarsi, and under part of feet banded with black ; skin not smooth but warty ; the trails on the posterior part of the body largely developed ; under parts yellow, the chin slightly marbled with black.

Dimensions. Length of head 1 inch 4 lines ; breadth 1 inch three lines ; length of head and body 3 inches ; length of arm 6 lines ; of forearm 6 ; of hand to extremity of longest finger 7 lines ; of thigh 1 inch 4 lines ; of leg 1 inch $4\frac{1}{2}$ lines, of feet to extremity of longest toe 1 inch $4\frac{1}{4}$ lines.

Habitat. Hong Kong ; bought in the market of that place, Sept., 1854, by Wm. Stimpson.

RANA TRIVITTATA nob.

Spec. char. Head triangular, snout rather acute, palatine teeth but slightly developed, in two converging rows, their posterior extremities wide apart ; tongue pyriform, deeply notched behind ; body and extremities slender ; color brownish, dark spotted, with three longitudinal white lines extending the whole length of the head and body commencing at the snout, the two exterior passing

[Oct.

over the eye; a truncate band reaching from the snout to the eye; extremities banded and brown spotted; two brownish bars on each side of the thighs posteriorly; under parts white.

Dimensions. Length of head 5 lines; greatest breadth 4; length of head and body 11 lines; length of anterior extremities 7 lines; of posterior 1 inch 10 lines.

Habitat. Hong Kong, China.

RANA NEBULOSA nob.

Spec. char. Quite small, head rather broad posteriorly, extremities slender, palatine teeth in two bunches between the internal nares; tongue pyriform free at the sides, and very much so posteriorly, notched behind; tympanum distinct; color brown above, skin smooth; chin, throat and abdomen white or grayish; under part of extremities flesh colored.

Dimensions. Length of head 4 lines; greatest breadth 4; length of head and body 10 lines; of anterior extremities 6 lines; of posterior 1 inch 1 line.

Habitat. Hong Kong, China.

Gen. remarks. The young no doubt of a larger animal.

RANA GRACILIS Weig., Nova. Acta, vol. xvii., p. 257.

Spec. char. Snout somewhat acute, supraciliary regions prominent; nostrils wide apart; skin of the back thrown into longitudinal rugose folds; body slender; head long and rather broad posteriorly, posterior extremities stout; color above brownish, dark spotted; with transverse dark colored blotches upon the back; a narrow longitudinal white line extending from the snout to the posterior extremity of the body, absent in some specimens; webs of the hinder extremities reaching to the base of the penultimate phalanx, except of the 4th, where it reaches the base of the antepenultimate; thighs and legs spotted and banded with brown; a series of longitudinal dark colored bars, broader below the hips; under parts white.

Dimensions. Length of head 7 lines; greatest breadth 5; length of head and body 1 inch 2 lines; length of anterior extremities 8 lines; of posterior 1 inch 11 lines.

Habitat. China, caught at Whampoa, June 1854, by Mr. Stimpson.

Gen. remarks. According to Weigmann, this small species is found on the island of Lucon as well as in China. They are used abundantly as an article of food in both places, and captured by thousands, especially for the market of Macao.

RANA MULTISTRIATA nob.

Spec. char. Color greyish above, with transverse angular bars of a darker color; upper and lower jaw dark-spotted; abdomen white; length 1 inch 3 lines.

Description. Head long, eyes not prominent, tympanum of moderate size, tongue obcordate, hollowed posteriorly; palatine teeth *en chevron*, between the interior nares; anterior extremities slender, posterior rather stout; color greyish above, with transverse angular bars of a darker color upon the head and body, one passing between the eyes, posteriorly prolonged *en triangle*; thighs round and mottled with grey and white; legs barred posteriorly with black; arms and forearms barred with black; upper lip barred with dark brown; lower, brown spotted, the interior margin rounded; chin mottled with brown; abdomen white, under parts of extremities plush color.

Dimensions. Length of head 6 lines; greatest breadth 5; length of head and body 1 inch, $2\frac{1}{2}$ lines; of anterior extremities 8 lines; of posterior, 1 inch, 9 lines; of thigh 6 lines; of leg 6; of tarsus 3.

Habitat. Hong-Kong, China. Two specimens.

OXYGLOSSUS Tschudi.

Oxydozyga Kuhl, MS. *Rhomboglossus* D. & B., MS.
1860.]

Char. Head triangular, tongue oval, attached in front, free on the greater part of its extent posteriorly; body short and thick, rugose above; eyelids warty, anterior extremities of moderate thickness, posterior rather stout, fingers slightly webbed at their base, four fingers, five toes, the second finger much the longer, the two outer ones of nearly equal length; *the web of the toes extending to the base of the terminal phalanx.*

OXYGLOSSUS LIMA Tschudi.

Syn. *Oxydozyga braceata* Kuhl, MS.

Bombinator lima Mus. Lugd. et Francf.

Oxyglossus lima Tschudi. Classif. der Batrachier. (Mem. Acad. Neuch. tom. i. p. 85.)

Spec. char. Brownish above, with a tinge of yellow below; a brown band bordered with white upon the posterior of the thighs.

Dimensions. Length of head 7 lines; greatest breadth 6; length of head and body 1 inch 2 lines; length of anterior exterior toes 6 lines; of posterior, 1 inch 7 lines; of thigh 6 lines; of leg 6; of tarsus 3; of foot to extremity of longest toe 7 lines.

Habitat. Hong-Kong.

Gen. remarks. In the webbing of the feet this animal resembles *Dactylethra*; but in the form and arrangement of the tongue, and in other respects, it is quite different. Dumeril & Bibron have given Bengal and Java as the habitat.

BUFONIDÆ.

BUFO LAUR.

BUFO GRISEUS nob.

Char. Head short and broad, snout slightly truncate; two rather long elliptical paratoids, toes semipalmate, numerous subround tubercles, above upon the back, color greyish above, white or light yellow beneath, with dark-colored markings upon the abdomen.

Dimensions. Length of head 4 lines; greatest breadth 4; length of body 9 lines; of arm 3 lines; of forearm 3 lines; of hand and fingers 3 lines; of thigh 4 lines; of leg 4; of tarsus 3 lines; of foot to extremity of longest toe 4 lines.

Habitat. Hong-Kong, China, July, 1854. Caught by Mr. Stimpson in the marshes of Whampoa.

ENGYSTOMA Wagl.

ENGYSTOMA PULCHRUM nob.

Char. Head small, triangular, snout acute; two tubercles upon the heel; toes semipalmated; ground color of head and body above yellowish, presenting several series of undulating bands, on the side of the latter resembling the contortions of certain geological formations; a black band across the head between the eyes posteriorly; a series of undulating bars in front of this; snout dark-colored, two dark-colored bands meeting near the middle of the body, and diverging; within them numerous dark-colored lines and oval spots bordered with white; similar oval spots between the thighs; arms partly yellowish; chin and throat mottled with black.

Dimensions. Length of head 3 lines; greatest breadth 3; length of head and body 10 lines; length of anterior extremities 6 lines; of posterior 1 inch. 7 lines.

Habitat. Hong-Kong, China. Common in the brackish water marshes between Hong-Kong and Whampoa, China. June, 1854. It is colored on the back with bluish. brown, white, yellowish, etc, concentrically arranged as in *Agate*.

[Oct.

HYLIDÆ.

POLYPEDATES Wagl.

POLYPEDATES MEGACEPHALUS nob.

Spec. char. Head large, two oblong patches of rugosities, upon the vertex; snout truncate, nostrils lateral, quite near the extremity of the snout; skin smooth, tongue cordiform, notched posteriorly, from behind and at the sides; palatine teeth on a level with the anterior border of the posterior nares, converging toward each other, separated from each other by an interval of half a line; body and extremities slender; fingers very slightly webbed at base, posterior webs extending to the base of the penultimate phalanx, except on the fourth where it extends to the base of the antepenultimate; color brown with dark-colored blotches upon the back bordered with white; sides marbled with dark-brown; lower parts light yellow.

Dimensions. Length of head 8 lines; greatest breadth 7; length of head and body $1\frac{1}{2}$ inches; length of anterior extremities 1 inch; of thigh 10 lines; of leg 9 lines; of tarsus 6 lines; of foot to extremity of longest toe 7 lines.

Habitat. Hong-Kong, China. Caught May, 1854.

Java.

OPHIDIA.

PYTHONIDÆ—Pythoniens holodontes D. & B.

Div. B.—Nostrils vertical.

PYTHON MOLURUS Gray. One specimen.

Habitat. Java. Taken on the Island of Java, purchased and presented to the expedition by Dr. Hamilton. Killed and skinned at Hong-Kong, (not in good preservation). This specimen measured 16 feet in length.

Cape of Good Hope.

TESTUDINATA.

Chersites D. & B. Testudines terrestres.

Gen. HOMOPUS D. & B.

In the collection of the expedition are eight specimens belonging to this genus, characterized by the presence of four toes only to each extremity.

HOMOPUS AREOLATUS D. & B.

Erpet. Gen. tom. ii. p. 146, pl. 13, fig. 2 and 3.

Testudo areolatus, Reil. Monog. Test. The central portion of the disk in these specimens is from light chocolate brown to darker, in some almost black. The sternum in some specimens is much darker than in others.

SAURIA.

GECKOTIDÆ.

Sauriens ascalabotes D. & B.

PHYLLODACTYLUS.

PHYLLODACTYLUS PORPHYREUS D. & B.

Spec. char. Head of moderate size, triangular, mental plate of moderate size, pentangular, eight inferior labials, nine superior, ground color above yellow, marbled all over with brown; under parts yellow.

Dimensions. Length of head 5 lines; greatest breadth $3\frac{1}{2}$; length of body 1860.]

13 lines; of tail 1 inch, 6 lines; of anterior extremities 6 lines; of posterior, 8 lines.

Habitat. Cape of Good Hope. Found in the moist crevices of rocks; common near Simon's Town, Oct. 1853.

AGAMIDÆ.

AGAMA Daud.

AGAMA ATRA Daud.

Agama atra D. & B., tom. iv. p. 493.

Agama atra Smith, Zoology of S. Africa, Appendix, p. 14. Four specimens. Very common at the Cape of Good Hope. Found sunning themselves on rocks; motions slow. Collected Oct. 1855, by Lieut. Van Wyck.

AGAMA ACULEATA? One specimen. D. & B. tom. iv. p. 499. Very common at the Cape of Good Hope. Found sunning themselves on rocks; motions slow. Collected by Lieut. Van Wyck.

ZONURIDÆ.

ZONURUS GRISEUS D. & B., tom. v. p. 350. Seven specimens. Taken under stones in high ground. Very common at the Cape of Good Hope. Oct. 1853. W. S.

AUTOSAURIENS.

EREMIAS KNOXII D. & B. tom. v. 299. Smith, Zoology S. Africa, pl. 43. One specimen. Taken in arid places, near Cape Horn. Its motions are exceedingly quick. Oct. 1853. W. S.

SCINCIDÆ.

GERRHOSAURUS.

GERRHOSAURUS SEPIFORMIS D. B. Smith, Zoology of S. Africa, pl. 41. D. & B., tom. v. p. 384.

Scincus sepiiformis Schneider. Hist. Amphib. fascic. ii. p. 191.

Scincus sepiiformis Merrem, Tent. Syst. Amphib. p. 70. One specimen, found under a stone on a grassy plat near Simons Town, Cape of Good Hope, Oct. 1853. W. S.

Gen. ACONTIAS Cuvier.

ACONTIAS MELEAGRIS D. & B. tom. v. p. 802, pl. 58. One specimen, found under a stone, in a moist situation, near Simon's Town, Cape of Good Hope, Oct. 1853. W. S. According to Dumeril & Bibron, this species is very common in the neighborhood of the Cape of Good Hope.

OPHIDIANS.

PROTEROGLYPHES.

Serpens proteroglyphes ou Apistophides D. & B. 1st Sect. Conocercal proteroglyphes.

Gen. NAJA.

NAJA HAJI. Aspis of the old authors. *Uraeus* Wagler.

Var. *intermixta* D. & B. One specimen. Smith, Zoology of Southern Africa, Var. B. pl. xix. This specimen was captured at Constantia, Cape of Good Hope, Oct. 1853, by Capt. Ringgold. Another specimen, brown above, with yellow spots upon the neck. The latter specimen measures 4 feet 5 inches in length; tail $8\frac{1}{2}$ inches.

SOLENOGLYPHES.

Serpens solenoglyphes ou Thanatophides D. & B.

[Oct.

Gen. ECHIDNA Merrem.

ECHIDNA ARIETANS Merrem, Puffadder, D. & B. tom. v. p. 1425. One very fine specimen. Taken near Cape Town, Cape of Good Hope, Oct. 1853. Purchased.

AGLYPHODONTES.

CORONELLA CANA D. & B. One specimen. Taken near Simon's Town, Oct. 1858. Lieut. Van Wyck.

HOMALOSOMA LUTRIX D. & B., tom. vii. p. 110. One specimen. Found under stones on the hill's head, Simon's town, Cape of Good Hope, Oct. 1853. U. S.

EPANODONTIENS.

ONYCHOCEPHALUS.

ONYCHOCEPHALUS DELALANDII D. & B., tom. vi. p. 573. One specimen.

BATRACHIA.

RANIDÆ.

RANA GRAYII Smith, Zoology of South Africa. Pl. 73, fig. 2. Common in moist grounds. Five specimens.

Madeira.

SAURIA.

Lezards LACERTIENS ou Autosaures D. & B.

Celodontes Leiodactyles.

Gen. LACERTA.

LACERTA DUGESII Milne-Edwards, Am. Sc. Nat., tom. xvi. p. 84, tab. 6, fig. 2.

Lacerta maderensis Fitz., Neu. Class. der Rept. p. 51.

Lacerta dugesi D. & B., tom. v. p. 236.

Habitat. Madeira. Seven specimens. Five adult, two young. In one of the young specimens the black lateral bands are destitute of yellow spots. Taken at the Island of Madeira, July, 1853. (C. Ames.)

BATRACHIANS.

RANIDÆ.

RANA VIRIDIS Roesel. *Rana maritima* Risso. Two specimens.

Habitat. Madeira. The spots upon the back do not appear to be so numerous as in the European specimens of *R. viridis*.

INDEX.

	PAGE.		PAGE.
Ablepharus Peronii.....	487	Lacerta Dugesii.....	509
<i>nigropunctatus</i>	487	<i>Lepidocephalus fasciatus</i>	498
Acontias meleagris.....	508	<i>Leptophidium dorsale</i>	498
<i>Aepidea robusta</i>	488	<i>Leptophis margareti</i>	484
Agama atra.....	508	<i>trifrenatus</i>	503
<i>aculeata</i>	508	<i>Lioninia vermiformis</i>	484
<i>Ameiva pulchra</i>	483	<i>Lygosaurus pellopleura</i>	496
<i>Amphiesma stotatum</i>	503	<i>Lygosoma vertebralle</i>	487
<i>tigrinum</i>	503	Guichenoti.....	489
<i>flavipunctatum</i>	503	taeniolatum.....	490
Anaides lugubris.....	486	<i>Megalops maculatus</i>	488
Anolis cupreus.....	481	Naja haji.....	504
<i>longicauda</i>	481	var. intermixta.....	508
refulgens.....	480	Onychocephalus De Lalandii.....	509
Batrachoseps attenuatus.....	486	Ophthalmidium tenue.....	497
<i>Blepharactis speciosa</i>	484	Otocryptis.....	491
Bothrops flavoviridis.....	492	Oxyglossus lima.....	506
Bufo griseus.....	506	Pelamis bicolor.....	489
<i>melanogaster</i>	486	Phyllodactylus porphyreus.....	507
Calotes versicolor.....	502	Platurus fasciatus.....	489, 493
Chelonia mydas.....	486	var.	489
Cnemidophorus quadrilineatus.....	483	Plestiodon marginatus.....	492
<i>decemlineatus</i>	482	latiscutatus.....	496
<i>Coniophanes fissidens</i>	485	Polypedates viridis.....	500
Coronella cana.....	509	Burgeri.....	500
Cynops suberistatus.....	494	megacephalus.....	507
Cystignathus melanonotus.....	485	<i>Proterodon tessellatus</i>	499
<i>Diploderma polygonatum</i>	490	Python molurus.....	507
Draconura bivittata.....	482	Rana viridis.....	509
Dryophis æneus.....	485	rugosa.....	494, 499
Echidna arietans.....	509	marmorata.....	500
Elaphis bilineatus.....	497	multistriata.....	505
Elaps melanocephalus.....	485	nigromaculata.....	500
Engystoma pulchrum.....	506	sylvatica.....	500
Eremias Knoxii.....	508	tigrina.....	504
Eumeces quadrivirgatus.....	502	trivittata.....	504
Euprepis concolor.....	486	nebulosa.....	505
Eurypholis semicarinatus.....	493	Grayi.....	509
Gerrhosaurus sepiiformis.....	508	gracilis.....	505
Hemidactylus præsignis.....	480	Sceloporus scalaris.....	482
<i>pumilus</i>	502	biseriatus.....	486
<i>marmoratus</i>	491	Sphæriodactylus millepunctatus.....	480
<i>inornatus</i>	492	Tachydromus Japonicus.....	495
Herpetodryas chloris.....	503	sexlineatus.....	495
Homalopsis buccatus.....	504	Taricha torosus.....	486
Homalosoma lutrix.....	509	Varanus bivittatus.....	486
Homopus areolatus.....	507	Zonurus griseus.....	508
Hyla cyanea.....	490, 494		
<i>grisea</i>	485	Genera.....	64
<i>arborea</i>	500	Species.....	94
Ixalus Japonicus.....	501		